

THE IRON AGE

THURSDAY, APRIL 30, 1891.

Steam Launch Zayda.

The accompanying illustrations of a 55-foot steam launch show what a complete cruiser has been successfully placed in the market by C. L. Seabury & Co., of Nyack-on-Hudson, N. Y. This size of steam launch is destined to become popular with yachtsmen who do not want a large steam yacht, owing to its great cost and the expense of keeping a large vessel. Many others, too, become tired of sailing yachts, from the fact of their being so much at the mercy of the winds and tides.

The Zayda was built for Tarrant Putnam, a well-known New York lawyer and prominent yachtsman, for use in cruising on Long Island Sound principally. The dimensions of launch are as follows:

Length over all.....	55 feet.
Beam.....	9 feet.
Depth amidship.....	4 feet 6 inches.
Freeboard amidship.....	3 feet.
Freeboard forward.....	4 feet 3 inches.
Length of forward deck.....	9 feet 4 inches.
Length of pilot house.....	7 feet 6 inches.
Length of owner's saloon.....	7 feet 8 inches.
Length of toilet room.....	2 feet 6 inches.

arranged for storage of clothes, linen, &c. When used for sleeping the seats have a folding extension lid, which makes them extra wide, and the cushions are hinged double so as to open out and make mattresses.

In the toilet-room is a patent pump water closet with outboard discharge, also a folding wash basin with hot and cold water connections. The cabin furnishings consist of Wilton carpets, plush cushions (mattresses), silk and damask curtains, &c., leather-covered life preserver cushions in the pilot house.

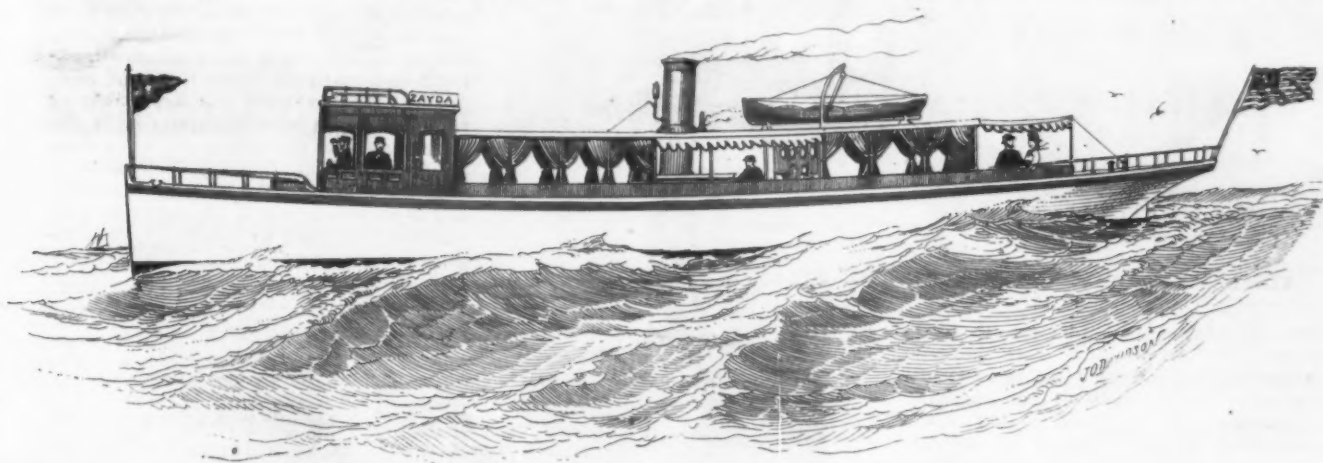
In the after cabin is a stove and cooking arrangements, also sleeping accommodations for the crew. Under the after deck a refrigerator is built. The vessel is supplied with folding tables, book and chart racks, wine locker and buffet, also a coat room on opposite side to toilet room. Every available space is used to advantage for the comfort and convenience of the owner.

The Engines.

The machinery is very compact and powerful and very highly finished, built

fire. Among the advantages which it is claimed to possess are: Its center of gravity is low, its weight is small, there is little heat in the engine room, the greatest body of water lies directly over the fire, the amount of heating and grate surface is large for the amount of floor space occupied, a large area of water connections for supplying heating surfaces, the water level is steady and the boiler is free from priming or foaming under all pressures and conditions. The fittings and connections consist of a very simple wrought-iron shaking grate, self-closing water gauge, try cocks, feed-water heater, pop safety valve, damper in smoke stack, &c. The accompanying sectional view of the boiler clearly shows its construction. The Zayda will be launched about May 15.

C. L. Seabury & Co. also have a 76-foot steam yacht in course of construction with a guaranteed speed of 18 miles per hour. She is very light weight, double planked, so as to gain strength, and has one of their 360 horse-power triple-expansion engine and safety water-tube boilers. She is fitted with under-grate blower and



STEAM LAUNCH ZAYDA, BUILT BY CHARLES L. SEABURY & CO.

Length of engine and boiler space.....	9 feet 6 inches.
Length of after cabin.....	7 feet.
Length of after cockpit.....	5 feet.
Length of after deck.....	6 feet 6 inches.
Full draft of water.....	3 feet 6 inches.

Description of Hull.

The hull is built of selected white oak frames and keel, with sister keelsons. The timbers are straight grained oak, steam bent, with oak deck timbers and floor timbers. Garboard strake and planking above the garboard is selected white cedar, copper fastened, and riveted throughout to frames and timbers.

She is fitted with an air-tight compartment forward, and water-tight bulkheads fore and aft of the engine room. The coal bunkers on either side of the engine room have capacity for carrying 1½ tons of coal, or enough to run the boat for about four days at ten hours per day. The water tanks are of copper and fitted under the floor of the owner's cabin.

The pilot house and cabins are built of mahogany with panel work finish throughout. Heavy bent French plate glass windows in the pilot house front are arranged to slide up and down, and on either side is an entrance door with slides in the roof. The cabin windows are all arranged in the same manner as the pilot house and can be lowered so as to make an open launch. All of the seats or berths have locker room under them and are carefully

for steady service, and in every case it has given entire satisfaction. The Zayda's engine is a 75 horse-power triple expansion, and occupies a floor space of 20 x 36 inches. It weighs only 900 pounds, and is to run 375 revolutions per minute. In the construction of this engine great care has been taken to have the wearing parts with large surfaces; all of the materials used were selected with a view to make this a perfect engine. It has air and feed pumps attached, thus making the engine almost automatic in its working. In addition to the feed pump on the engine there is an auxiliary pump of the duplex pattern, which can also be used for washing down decks, as it has sea connections. The diameters of the three cylinders are respectively 4½, 6½, and 10½ inches, and the stroke is 8 inches.

The Boiler.

Steam is supplied by a Seabury patent safety water tube boiler, which has 300 square feet of heating surface and 9 square feet of grate surface. It occupies a floor space of 44 x 46 inches and weighs less than 2500 pounds. It has been tested to 750 pounds hydrostatic pressure; the usual working pressure is 260 pounds; steam can be obtained from cold water within ten minutes after lighting the fire.

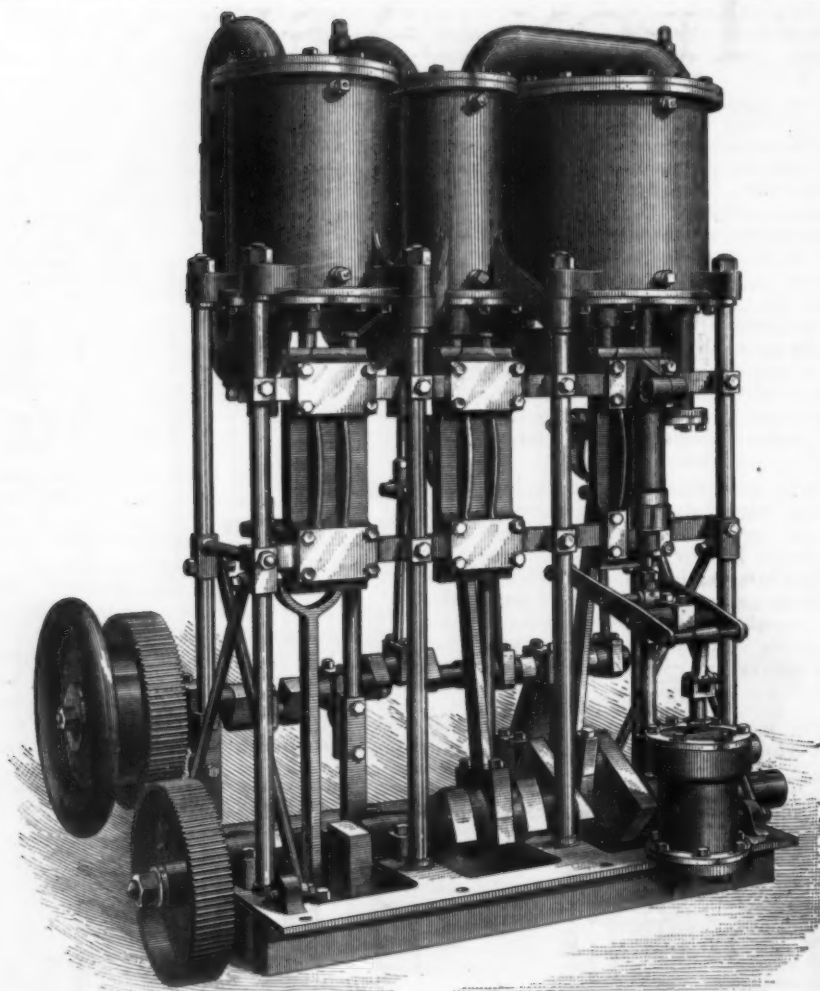
The boiler is constructed of lap-welded wrought-iron pipe, there being no cast or malleable iron in direct contact with the

in-board surface condenser. This boat will be ready for launching May 25. In addition to the yachts described they are building a cruising steam yacht, flush deck, 80 feet long, and several small steam launches.

Although this concern have only been in business about two years, there are now about 20 of their steam yachts and launches in service.

The Advantages of Travel.

The concluding paragraph of the paper read by Jeremiah Head of Middlesborough on the observations during his stay in the United States may be quoted: If the people of the United States have still a good deal to learn from us—which they freely admit—it is equally certain that we have a good deal to learn from them. And that is what mainly concerns us. We must make up our minds to travel more than we do in foreign countries. That is one thing we may learn from them. In those departments of knowledge in which they have beaten us (and they cannot be counted on the fingers of one hand) it has been, I think, largely due to their practice of superadding the results of their own experimental investigations to experience gathered in Europe, the practice they there found being first divested of the cramping effect of prejudice and red tape.



TRIPLE-EXPANSION ENGINES OF THE STEAM LAUNCH ZAYDA.

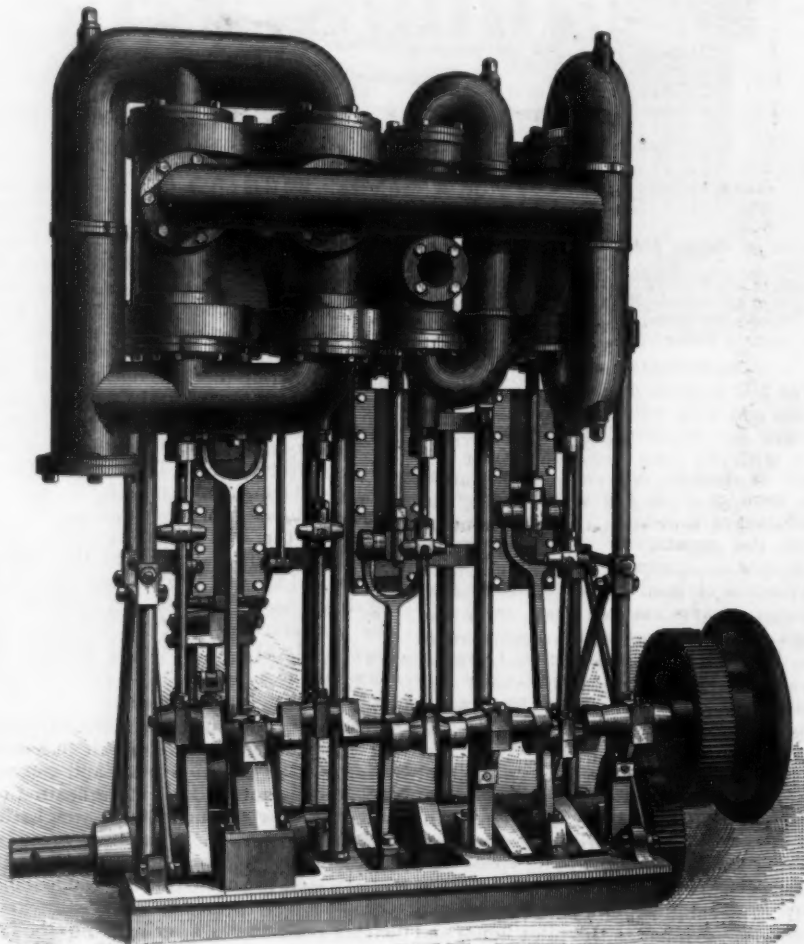
If you think I exaggerate, let me ask you to compare the manufacture of watches as it existed in England 20 years ago with the same as it exists in Waltham to-day. All materials, labor, prestige and experience were in our favor, and we ought to have retained the trade. Nevertheless, English consumers are to-day buying American watches in large quantities, and better ones for the money than can be made here. All this is because they have perfected their types and organized the manufacture in a more thoroughly scientific and better manner than our habits and prejudices would admit of our doing. Then, let us take some leaves out of their book and travel and see what others are doing. The laurels of our forefathers won't last for ever. We must seek fresh ones for ourselves.

Forfeits in Combinations.

Judge Pryor of New York, has handed down an opinion in a suit brought by the De Witt Wire Cloth Company against the New Jersey Wire Cloth Company to recover for goods sold and delivered. Both companies, it is stated, were members of the Wire Cloth Trust. The New Jersey company had deposited \$2000 with a trust company, to be forfeited to the other companies in the trust in case they should violate the trust agreement. They were declared to have violated the agreement, and the \$2000 was forfeited. The De Witt company received \$500 of the forfeit money as their share. When later they sued the New Jersey company, as above stated, that company interposed as a counter claim the \$500 forfeit money, claiming that the De Witt company were not legally entitled to it. The De Witt company challenged the validity of the counter claim in a demurrer. In his opinion sustaining this demurrer

Judge Pryor says: "The declared purpose of the agreement is to enable the association, as between its members, to regulate the price of the commodity in which they deal, and this result is accomplished by empowering the association to fix a price, and by binding its members under a penalty not to sell below the sum so prescribed. Since all the members are to sell for the same price, of course competition between them is impossible, and, having power to fix the price, they will be impelled by the irresistible operation of self-interest to raise that price to the highest attainable figure. Here, then, is an agreement of which the inevitable effect is, in conformity with its proclaimed design, to restrict competition in trade and to arbitrarily enhance the price of a commodity of commerce. That such a contract is repugnant to popular policy, and so unlawful, is a settled principle in the jurisprudence of this country. The people have a right to the necessities and conveniences of life at a price determined by the relation of supply and demand, and the law forbids any agreement or combination whereby that price is removed beyond the salutary influence of legitimate competition.

By the overwhelming, if not uniform, current of authority the agreement under criticism is condemned as contrary to public policy and as illegal. Nor is the operation of the rule forbidding contracts restricting competition and enhancing price limited to trade in the necessities of life, but, as appears from the cases cited, extends equally to all commodities of commerce. Neither need the agreement or combination, in order to expose it to the denunciation of the law, constitute a complete monopoly or effect a total suppression of competition, but the language of courts and of writers is that if the agreement or combination tends to monopoly, or to reduce or lessen competition, it is contrary



TRIPLE-EXPANSION ENGINES OF THE STEAM LAUNCH ZAYDA.

to public policy and unlawful, because operating *pro tanto* an artificial enhancement of price.

Its results, therefore, that as defendants' counter claim demands the repayment of money received by plaintiffs upon an illegal agreement, the court will not interpose for its restriction.

Electrical Forging.

BY GEO. D. BURTON, BOSTON.

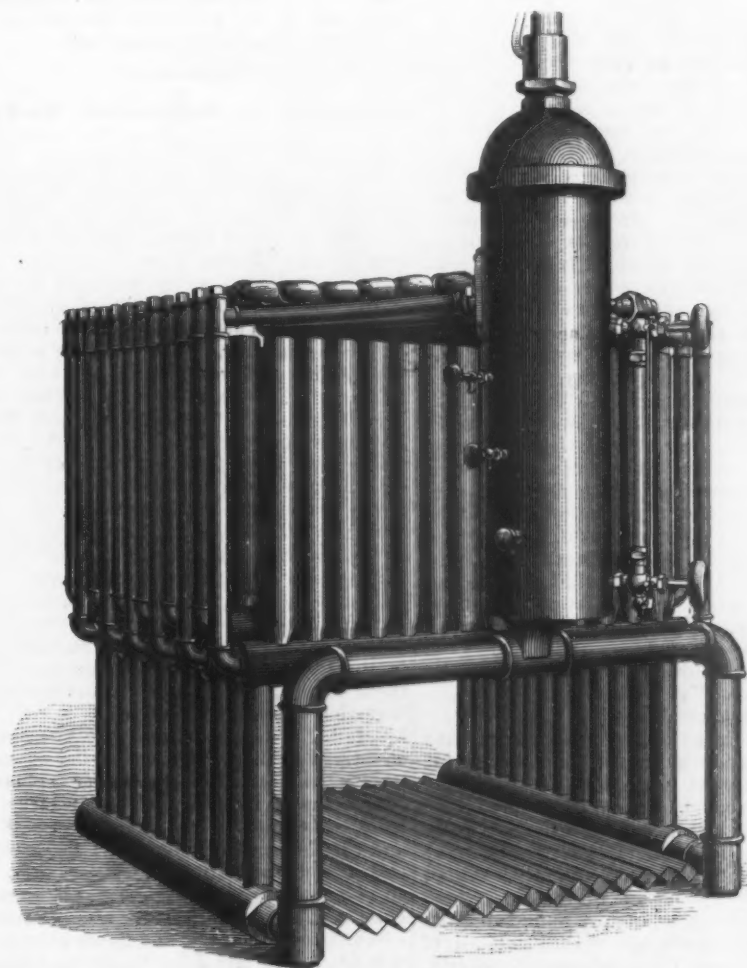
It is claimed, and I believe admitted, that the Hindoos excelled all nations in tempering their weapons and tools, though their methods were crude. The celebrated Damascus blades, which were so highly

has been subjected, while, by the use of electricity in the manufacture of steel blades, we are enabled to obtain an even heat and a uniform temper, thereby restoring a lost art.

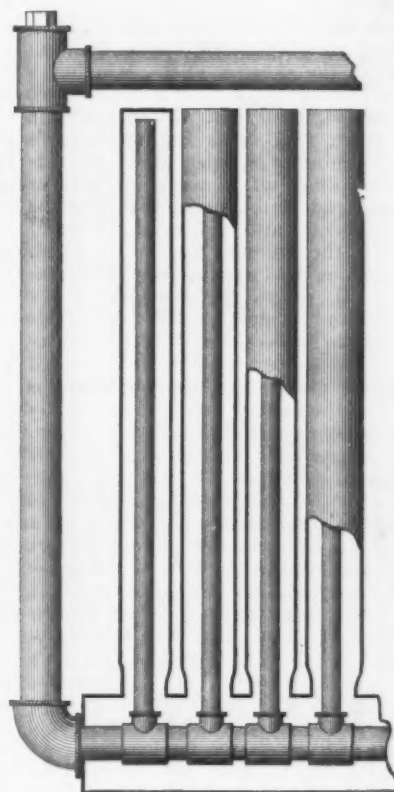
Experience has taught us that the best steel is made by cementation from forged iron, but during the process the iron must not become completely fused, since then groups or crystals of different degrees of carbonization are formed. In making cast steel it is important that the workmen should have experience and skill to judge when the moment of proper temperature has arrived, as the quality and uniformity of the steel depends in a great measure upon this. Up to the year 1850 horseshoe nails were made by hand—10 to 12 pounds being a day's work for a skilled workman. In that year the plan of forg-

more compact and will not crack or split, for, should there be any latent defect or crack in the metal, by the application of electric heat it is firmly and instantly united by the instantaneous application of the die, for, when the heat required to properly soften the bar is once determined, it is thereafter fed intermittently to the dies by automatic devices, which enables one man to attend to four machines, which have a capacity each of 60 horseshoe nails per minute, and, when finished, every nail will be alike and will not crack or split when used.

Railroad spikes, bolts, shoe calks, wrench screws, anti-friction rolls, balls, knife blades, and a great variety of like and unlike articles can be made by the electrical forging process. To illustrate: A steel bar 12 feet long and $\frac{3}{4}$ inch square



BOILER OF STEAM LAUNCH ZAYDA.



valued in Europe for their temper and edge, were made in Damascus from steel manufactured in India. The Crusades extended the reputation of these sword blades over all Europe. Up to the present time it is claimed that the art of thus tempering blades has not been restored, though numerous attempts have been made, both in this country and Europe. We claim that by the introduction of electricity as a heating agent, then subjecting the heated part to pressure, the particles or molecules of the metal are more firmly united, thus rendering the steel blades susceptible to a better temper and finer finish. We also claim that electrical heat changes the character of the metal. Yet it is claimed that under any other process or degree of heat steel is altered in its texture in tempering; the granulation becomes coarser or finer, according to the degree of heat to which it

ing horseshoe nails by machinery from a red hot rod, in a manner similar to that of the blacksmith, was conceived, and, after much money and time were spent in projecting and perfecting a machine which would make nails equal, if not superior, to those made by hand, a successful working machine was produced, capable of making a nail embodying all the desirable qualities of the very best hand-made nail and at a much less cost. One hundred and fifty pounds are made daily by this machine. The rod from which the nail is forged is heated in the ordinary way and fed by hand to the machine dies. The heating of the rod requires careful attention, for if allowed to become overheated the metal is then unfit to produce a sound nail, while if fed to the dies before sufficient heat is developed in the rod, a nail produced from a bar or rod in this condition is liable to crack or split, which fact may not develop until the nail has been driven into the hoof. We claim that, by our process, a nail made by electrical heat is

is fed automatically to the cutting dies, which cut off from the bar a blank of the necessary length for a railroad spike. The blank is then passed mechanically to the adjustable electrodes and heated, and from the electrodes to the shaping dies. The blank from which a railroad spike is made is $9\frac{3}{4}$ inches long and $\frac{3}{4}$ inch square, and is sufficiently heated by the electrical current in a few seconds. This operation of feeding and heating the blank is continued until the bar is used, when another is placed in position and the operation repeated. The spike machine used by the Electrical Forging Company is applicable to a great variety of metal work. One year has been required in which to perfect this machine. Its weight is $8\frac{1}{2}$ tons, and the adjustment so complete that a blow of 60,000 pounds can be given, or one so slight as merely to crack the shell of an egg. In our rolling department two sizes of machines are used for making shoe calks, machine handles, anti-friction balls, bolts &c. The operation, so far as the

* A paper read before the Franklin Institute, Philadelphia, April 15.

heating of the metal and feeding it to the dies is concerned, is the same as that heretofore described. The uses to which these machines can be put are many and varied. In rolling a bolt the heated bar is fed to the machine, and, as the two dies pass each other, the bolt is formed, head and thread complete, at one operation or revolution of the machine. By changing the dies to those of other shapes we change the general outline or configuration of the article; in other words, the article produced depends upon the shape of the dies.

The importance of this invention is beyond computation, owing to the fact that in the manufacture of a vast number of articles it supersedes the work of the trip hammer, the lathe, and other customary methods of forging. It wastes little or no material, while accomplishing many things heretofore deemed impossible, and is so quick and accurate in its operation that its productive capacity is far in advance of any other process in mechanics. It saves labor, material and time, and reduces the cost of production so that it must inevitably control the manufacture of any article that can be produced by it. It is as if one took a red-hot steel bar, inserted one end in the machine, and for every revolution of the mechanism produced the desired effect, whether a sphere, conical shot, a chair screw, a bolt with thread, head and all complete, a boiler rivet, tiny calks for lumbermen's shoes, or spindles or taper pins. In cutting the thread of a screw or bolt as now produced it is known that there is waste of metal; also a loss of no small portion of the strongest parts of the metal. This machine does not cut away, but compresses. It places the strength of the metal where it is most wanted. With this machine the hardest metal is treated as easily as the softest metals were treated by the old process. A perfect thread is shaped on the hardest tool steel as quickly and as easily as if made of the softest iron. Round shapes have puzzled metal workers through all past ages. It has been generally conceded that the usual methods of forging an approximate shape and then turning to accurate size on a lathe are tedious and expensive ways of doing the work. For nearly 100 years experiments to make round forgings by a rolling process have been going on, but with indifferent success. A history of these attempts show many partial successes, but in every case some vital principle has been omitted, or some mistake made, which has prevented ultimate success. By my process one man with one machine produces 20,000 steel spheres per day of ten hours. The metal bar being heated by electricity, an even heat is maintained, and every sphere produced is made under the same degree of heat. The result is better product, on account of the uniformity of the degree of heat, which, in any other way, at present is not obtained. In the production of steel blades, the blank is cut cold from sheet steel, then heated by electricity and drawn out under a trip hammer to the proper shape. When this process is complete it is ground and then hardened by the electrical tempering machine. It is then sharpened and polished to a finish and is ready for market.

The Electrical Forging Company's factory is located at 163 to 169 Oliver street, Boston, Mass., and equipped with the latest improved machinery. The electric power is obtained from the Edison Company's power station, which drives a 60-horse-power Thomson-Houston motor, located in the factory, which has a speed of 1020 revolutions per minute. The belt runs direct from the motor to the main shaft, and from this shaft a belt runs to the alternating current generator or heating apparatus, which is of a peculiar design, built especially for the Electrical Forging Company, the capacity being 60 horse-

power, and furnishing a current capable of heating a bar of steel or iron 8 inches long and 1 inch square, its entire length, to a white heat in 20 seconds. The speed of the generator is about 650 revolutions per minute, with an efficiency of 1600 volts. The fields are excited by a 2 horse-power motor. Current is passed from the alternator through our converter, which reduces the current to a very low voltage and increases the intensity of the same to about 12,000 amperes. It is to be understood that the conducting medium from the converter to the heating electrodes varies in size and capacity according to the piece desired to be heated. This also applies to the electrodes, which are of peculiar designs, the construction of which we are not prepared to make public at this time.

Concerning my methods of and apparatus for heating metals by electricity, the question is asked, Wherein does the electrical forging process differ from the welding process of Professor Thomson? It looks like a step from welding to forging, and a short one at most, and that I have gone over the same route; yet the underlying principles necessary to perform the functions capable of carrying the two methods into practical operation are vastly different. Professor Thomson's process of welding relates solely to the union of metals, which, I believe, is generally conceded by the best electricians to be effected by an imperfect contact; while my process of forging demands a different apparatus and specially constructed resistances to receive the current when the load is suddenly removed from the generator; for illustration, when we instantly withdraw a heated blank from our electrodes, as well as while the piece is being heated. Instead of heating the metal at the ends, for the purpose of effecting union between two pieces of metal, my arrangement is, by the electrical forging process, to heat, if required, a solid bar, rod or blank of a determined size and length in its entirety, and when properly heated the bar or rod is passed automatically between dies, rolls or other shaping devices for the purpose of giving the necessary shape to the article produced.

I use both the constant and intermittent current, according to the class of machine and nature of the work to be done. Probably some of the methods of which I have spoken and the operations of some of the devices pertaining thereto may seem to you somewhat obscurely stated, and raise questions in your minds which would lead you to inquire more fully into the practical workings of the same, all of which we admit; but, permit me to add, working in a new field as we are, I feel that I have been as frank and concise in the treatment of the various subjects as could reasonably be expected.

Reduced Valuation of Lake Tonnage.

According to figures compiled by the *Marine Review*, the Inland Lloyds Register for 1891 shows a reduction of about 9 per cent. in the valuation of lake tonnage. Comparisons with former years are not of as much significance as they would be were it not for the fact that a large number of the poorer craft are dropped from the book altogether in addition to the reduction in values. As shown by a summary printed below, the new book contains the names of 2093 vessels with a total net registered tonnage of 845,197 and a total valuation of \$54,197,250. The register of a year ago contained the names of 1974 vessels, with a total tonnage of 764,572 and a valuation of \$50,200,800. The gain in the number of boats is 119, in net tonnage 80,625, and in value \$3,996,450. This represents, of course, only the business fleet. In a few cases valuations are not given in the new books, but they are

based on last year's values or estimated in the following summary:

Class	Number of boats.	Net tons.	Valuations.
Side wheel.....	51	16,215	\$1,985,500
Steamships.....	710	509,747	41,462,050
Sail and consorts...	883	306,828	8,253,000
Tugs.....	449	12,407	2,496,700
	2,093	845,197	54,197,250

Last year's register, with the supplements issued from month to month during the season of navigation, contained the names of 2053 vessels, aggregating 845,252 tons and valued at \$58,113,300. Thirty-four of these boats, aggregating 16,306 tons, and valued at \$737,000, were lost. This would leave to be transferred to the new book 2018 vessels of 829,219 tons, valued at \$57,356,300. By careful figuring it is found, after making allowance for the boats launched during the winter, that the total value of last year's fleet has been cut to \$52,168,250, or about 9 per cent.

Syndicating the Moline Plow Works.

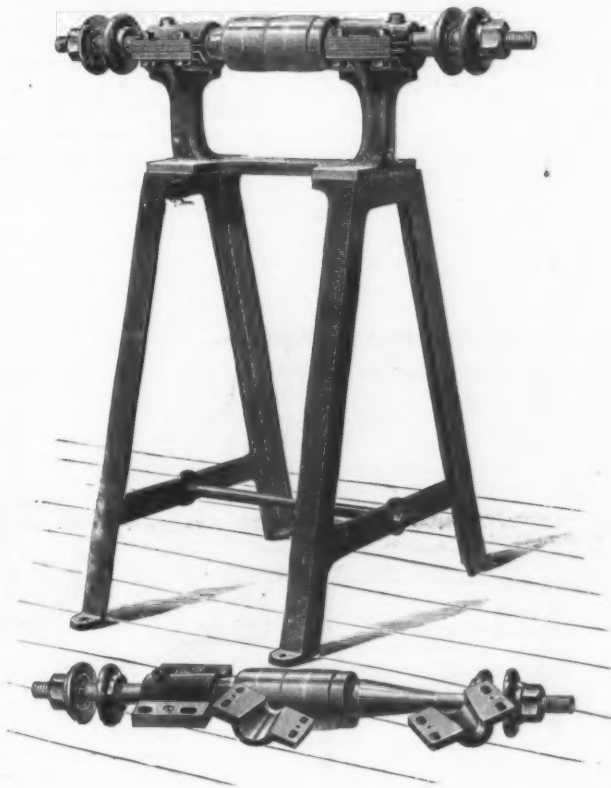
Negotiations are now well advanced toward consummation, says the *Chicago Economist*, for the sale of the plow works of Deere & Co. of Moline and the property of the Moline Plow Company, as well, it is believed, as the works of Deere & Manshur, the idea being to recapitalize these properties and market the securities on substantially the same plan on which the English syndicates have operated in this country. The deal is in the hands of Lee, Higginson & Co. of Boston, and Mr. Higginson has this week been in the city making an investigation of the subject. One of the gentlemen actively interested in the trade is F. L. Underwood, an exceedingly bright and enterprising promoter, whose home is in Kansas City. He has been in Chicago for a few days, but left for Boston Thursday night to attend to the final arrangements for transferring the property. Mr. Viele, who has an interest in the present plants, is also engaged in these negotiations, and it is understood that the well known brokerage house of Lobdell, Farwell & Co. and the American Trust and Savings Bank are parties to the transaction, each in its proper sphere. The works of Deere & Co. are represented by a capitalization of about \$1,500,000 and the Moline Plow Works of \$800,000, and it is claimed that the latter have a surplus of \$700,000. Among the iron men the Deere Company have the higher credit of the two concerns. The Deere property was left by the late John H. Deere, whose successor is Charles H. Deere, well known among Chicago business men. Deere & Co. also have important business interests in Minneapolis and Council Bluffs. S. W. Wheelock is understood to be the leading owner in the Moline Works.

Tentative negotiations for a deal of this sort have been in progress for something like a year, and just before the panic of last November it looked as if the trade would be consummated, but, of course, everything in that line was thrown out of gear by the events of that period. It is understood that an English promoter had an option on the property at that time, but finally declined to take it and forfeited \$25,000 earnest money. The present deal is so near accomplishment that it is regarded by persons near the parties concerned as a sure thing, though, of course, nothing of the sort is absolutely certain until the papers pass. Some of the securities it is proposed to issue have been underwritten, mostly in Boston, a few of them in Chicago and perhaps still a few in London. An effort was made some time ago to combine with these works one of the large agricultural implement manufacturing companies of this city, but without success. The works which it is now proposed to

recapitalize manufacture plows, harrows and similar agricultural implements, but do not turn out any harvesters. Further and more definite announcements in regard to this transaction will be made hereafter. At the present time this is all that can properly be said.

Adjustable Cone-Bearing Polishing Machine.

This machine was thoroughly tested at the works of the Palmer Hardware Mfg. Company of Troy, N. Y., before being placed on the market. Its construction is such that the bearings can be easily and quickly adjusted to a perfect fit without stopping the machine. The shaft has oppositely inclined tapered bearings, fitting into correspondingly tapered boxes adjustably bolted to the frame. To take



PALMER'S ADJUSTABLE CONE-BEARING POLISHING MACHINE.

up the wear of the boxes it is only necessary to loosen the fastening bolts of one box, then slide the box to the desired position against the shaft cone (which can best be determined while the shaft is in motion) and then clamp it in position by tightening the bolts. The springing of the shaft is prevented by making it unusually heavy between the bearings. This construction insures the even wearing of the entire inner surface of the box, and since the shaft can always be kept in perfect alignment more and better work is possible.

Bids were opened at the Treasury Department for the construction of two new lighthouse tenders, which will be known as the Lilac and the Columbine. The dimensions of the vessels are to be as follows: Length over all, 155 feet, and beam, moulded, 26 feet 6 inches. There were 14 bidders, the lowest being the Globe Iron Works, Cleveland, Ohio, their figures being \$77,850 for each vessel.

The New Jersey Dry Dock and Transportation Company of Elizabethport, N. J., are now constructing a marine railway which will have a capacity of 2500 tons.

The Calculation of Blast-Furnace Slags.—III.

BY A. J. ROSSI, NEW YORK.

In this transformation into lime we find a ready means of comparing slags. One may have been obtained at a much less expense than another and still the same product in pig iron may have accompanied both in the furnace. By reducing the two analyses to lime, thus representing each slag by an equivalent hypothetical slag containing only lime and silica, the comparison becomes very easy, the basicity can be determined at once, and the operations necessary to obtain this transformation are such as not to require any kind of symbols or formulæ.

It occurs very often that slags which

No. 3 is a slag from the northwestern part of Europe, made in a coke furnace with white and light mottled iron with a little No. 5 gray. The reduction to lime allows us at once to establish their identity. The type neutral, No. 3 of Table I, to which the three correspond, is represented by:

Type neutral.	Slag No. 1.	Slag No. 2.	Slag No. 3.
Silica.....51.72	51.27	51.06	52.09
Lime ....48.28	48.73	48.94	47.91
Totals...100.00	100.00	100.00	100.00

In calculating slags, instead of following the preceding method of reduction to lime (which has other applications, as we have seen, that may render it useful for other purposes), a certain amount of silica—say, for instance, 36 per cent., as the percentage of silica in the complete analysis of the slag, not in the slag transformed into lime—is sometimes assumed as the basis of the operations. This method does not involve either the use of formulæ or symbols, though it requires an elementary knowledge of algebra; but, as we will see, it may not prove always as satisfactory as the other is sure to be.

To say that we want to obtain a slag containing 36 per cent. SiO₂, as the amount of silica in the complete analysis may not be sufficient to insure a certain grade of iron, as it does not necessarily carry with it a certain fusibility necessary to obtain such a grade of iron. Several slags may be found to answer this condition—36 per cent. silica contents—which, at the same time, may possess different fusibility, and consequently accompany widely different grades of iron.

Take, for instance, the two following slags. No. 1 is a slag made on cold blast at Hamm Furnace, the furnace running on white pig—spiegeleisen; the other, slag No. 2, is an English slag from Low Law Furnace, burning coke and running on No. 1 foundry:

	No. 1. Spiegeleisen.	No. 2. foundry
Silica	36.80	36.80
Alumina.....	2.10	13.80
Magnesia.....	8.60	2.54
Ox. Manganese.....	29.20	.....
Ox. of iron.....	22.50	.....
Alkalies (soda).....	.....	0.86
Lime.....	.....	46.00
Sulphur.....	0.02	.....

No. 1 slag reduced to lime gives:

Silica.....	41.88
Lime.....	58.52
Total	100.00

The type No. 3 is

Silica.....	41.66
Lime	58.34
Total.....	100.00

Both slags contain the same amount of silica—36.80 per cent.; but white slag No. 1 meets exactly almost the character sesquibasic; type No. 4 of Table I, slag No. 2, is more than bibasic, falling as type between No. 5 and No. 6 of table—that is, between bibasic and tribasic.

	No. 2 slag.	Bibasic. No. 5, Table I.	Tribasic. No. 6, Table I.
Silica.....	32.77	34.88	26.30
Lime.....	67.63	65.12	73.70
Totals.....	100.00	100.00	100.00

We may say that we wish to have 36 per cent. of silica, for instance, or any other quantity, in the complete analysis of a slag, but in assuming the silica we have forced beyond remedy the proportions of the other constituents, whatever the composition of the ores, fuel and stone will make them. Consequently the fusibility of the slag becomes and will be what the composition will make it, and not any more one chosen beforehand. The problem, considered in this manner, is not certainly as general.

Being given ores, fuel and stone of which the analysis is known, how much of

offer the most remarkable points of difference in their composition, as given by the analyses, do actually accompany the same grade of iron, being in fact of the same type, however different they may appear at the inspection of the analyses. Reduced to lime and silica their identity becomes evident. For instance, let us consider the three following slags:

	No. 1.	No. 2.	No. 3.
Silica	54.00	48.75	41.02
Magnesia.....	0.57	5.50	15.10
Lime	25.07	7.50	6.50
Alumina.....	13.04	2.50	17.20
Ox. of iron.....	2.44	1.80	0.42
Ox. of manganese.....	2.20	33.40	0.11
Totals.....	97.92	99.45	100.45

At first sight they appear certainly to be widely different. It would require a very experienced person, to say the least, to decide *a priori* as to their basicity and formula. Still, these three slags, which were all three actually run in blast furnaces, are identical as to types. They are all three neutral slags, No. 3 of table, and have all been made with white iron.

No. 1 is an English slag from a charcoal furnace, slag quoted by Percy merely as an example of normal slags of the furnace. It accompanied white and mottled white iron.

No. 2 is a slag from the Münsen furnace, running on white iron, spiegeleisen.

each of these materials must we take so as to obtain from the charges thus calculated a slag which, transformed into silica and lime, will have the same typical composition as approximates that of any of the types?

We could quote actual examples to show that slag calculated on the basis of 36 per cent. of silica in the complete analysis proved to be much more basic than actually was necessary. In the case alluded to there was an excess of nearly 50 per cent. of limestone in the charges for the same ores and fuel. Another slag actually made on charges calculated on a basis of type No. 5 (Table I), silica, 35; lime, 65, required 50 per cent. less lime in the charges for the same quantities of ore and fuel, and still the iron obtained in both cases was of the same grade, No. 1 foundry. The complete analysis of the second slag gave 42 per cent. about for the silica in the slag, as against 36 per cent. in the first. Of the two the second was certainly more economical in lime consumption, indirectly, in the burden, in the fluidity of slag, in contingent saving on the fuel, which could have been diminished, the ores remaining the same. The slag at 36 per cent. silica (complete analysis), reduced to lime, corresponded about to silica, 30; lime, 70; as against 35 silica and 65 lime, in round numbers, for the second, which was exactly of the type No. 5.

A method for calculating slag, based on the assumption of a certain amount of silica in the ultimate (not the transformed) analysis of the slag, has been given in *The Iron Age*, Vol. XLVII., February 19, 1891.

In using this method we might suggest a few simple features. Calculate as before for 1 ton of ore, let $\frac{1}{4}$ ton be the amount of fuel used per ton of ore. Let the ores, fuel and stone analyses be as follows:

A ores—1 ton	Stone B.	Fuel C.
Silica..... 8.32	3.00	3.35
Lime..... 1.22	30.10	0.10
Alumina..... 3.02	2.50	2.73
Magnesia..... 0.41	19.00	0.10
Ox. Manganese..... 0.25	.....	.....
13.22	54.50	6.28
per cent. of slag-making materials in ores.	per cent. of slag-making materials in stone.	per cent. of slag-making materials in fuel.
0.1322 ton in 1 ton ore.	0.5450 ton in 1 ton of stone.	0.0628 ton in 1 ton of fuel.
		equivalent to 0.0472 ton in $\frac{1}{4}$ ton.

and since there are 3.35 per cent. silica in 1 ton of ash or 0.0335 ton, in $\frac{1}{4}$ ton there will be $0.0335 \text{ ton} \times \frac{1}{4} = 0.0252 \text{ ton}$. Hence we have, calling a the unknown quantity of stone to be charged with 1 ton of ore and $\frac{1}{4}$ ton fuel:

In 1 ton of ore.	In $\frac{1}{4}$ ton of fuel.	In 1 ton of stone.	Totals.
Silica:			
Ton. 0.0832 + 0.0252 + 0.0300 $\times a$	Ton. 0.0832 + 0.0252 + 0.0300 $\times a$	Ton. 0.0832 + 0.0252 + 0.0300 $\times a$	Ton. 0.0832 + 0.0252 + 0.0300 $\times a$
Total slag making materials:	Total slag making materials:	Total slag making materials:	Total slag making materials:
Ton. 0.1322 + 0.0472 + 0.5450 $\times a$	Ton. 0.1322 + 0.0472 + 0.5450 $\times a$	Ton. 0.1322 + 0.0472 + 0.5450 $\times a$	Ton. 0.1322 + 0.0472 + 0.5450 $\times a$

But the silica must be 36 per cent. of the total amount of slag. Hence: Total silica $0.1084 + 0.03 \times a = 0.36$, or 36 per cent. of $(0.1794 + 0.545 a)$ $0.1084 \text{ ton} + 0.03 \times a = 0.0644 + 0.1962 \times a$
 $(0.36 \times 0.1794) (0.36 \times 0.545 \times a)$

Transposing:

$$0.1084 \text{ ton} - 0.0644 = 0.1962 \times a - 0.0300 \times a.$$

$$\text{Or: } 0.0440 \text{ ton} = 0.1662 \text{ ton} \times a$$

$$a = \frac{0.0440}{0.1662} = \frac{440}{1662} = 0.264 \text{ ton}$$

and the charges are per ton of ore:

Ore.....	Ton. 1.00
Stone.....	0.27
Coal.....	0.75

Taking these figures of the charges per ton of ore, and using the percentage of

each of the constituents of the materials as furnished by analyses A, B, C, we find as totals, in 1 ton of ore, $\frac{1}{4}$ ton of fuel, 0.264 ton of stone:

	Ton.
Silica.....	0.1163
Lime.....	0.0913
Alumina.....	0.0573
Magnesia.....	0.0543
Ox. Manganese.....	0.0025

Which, reduced to a percentage, gives, as expected:

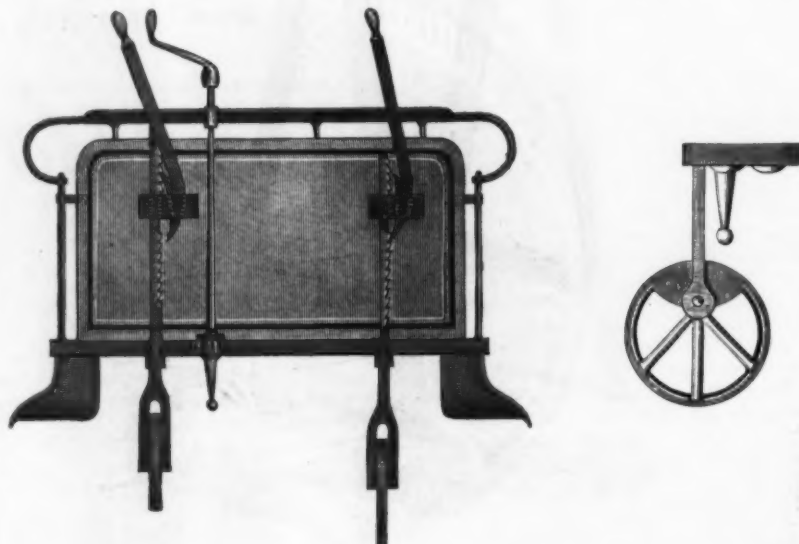
	Ton.
Silica.....	36.03
Lime.....	28.45
Alumina.....	17.70
Magnesia.....	16.97
Ox. Manganese.....	0.78
	99.90

And reduced to lime:

	Ton.
Silica.....	30.59
Lime.....	69.41

This method of reduction to lime can be soon mastered by practicing it on a few examples. The most important constituents of a slag are only, besides lime, alumina and magnesia, and perhaps oxide of manganese in certain cases. Their equivalence in lime is soon remembered. The same thing can be said of the types, which in ordinary practice are reduced to three, No. 3, No. 4 and No. 5, and even for most furnaces which do not work on white or mottled iron only two, No. 4 and No. 5. Any slag

and the eccentric wheel is journaled in the lower end of the rack. The short side of the wheel is weighted, so that when not touching the ground the short side will be downward. The rack on the left-hand side of the cut is shown raised up, as it would be while not in use; that on the right is shown lowered, in the act of depressing the switch. The operation is as follows: On reaching the switch platform the driver moves the dog lever from the position shown on the left side of the cut to the position of the lever shown on the right side of the cut, thus withdrawing the dog from the upper teeth and thereby allowing the rack to fall by its own weight, the dog catching in the lower set of teeth and holding the rack down. The eccentric wheel, being weighted on the short side, that side strikes first when the rack slides down, and as the dog prevents the rack from rising, a semi-revolution of the wheel throws the weight of the car on the switch platform, making its operation quick and positive. The driver then places his hand again on the dog lever, so that when the pressure against the rack is relieved by the further turning of the eccentric wheel the dog will return to its original position against the upper set of teeth, and the next revolution will



ELECTRIC CAR ATTACHMENT FOR OPERATING PLATFORM SWITCHES.

from any source can at once be pronounced upon as to fusibility and probable accompanying iron by being thus transformed. The effect of a modification of certain elements of the charges on the character of the slag can be ascertained at once without making the entire calculations anew. It is this method that we have exposed in full and discussed in the two papers read before the American Chemical Society in August, 1890, having especially in view then to support it by a technical discussion of the principles it involves.

Electric Car Attachment for Operating Platform Switches.

The object of this attachment, which is made by G. K. Anderson of 30 Hanover street, Boston, is to enable the driver of an electric car to operate table switches without moving from his position on the platform. The driver, by pulling a lever, throws the weight of the car on the switch platform for a moment, and, by reversing the lever, removes the weight, or, strictly speaking, prevents a repetition of the pressure. The device consists of a sliding rack, a double dog and an eccentric wheel.

The teeth on the upper end of the rack face downward, those beneath face upward,

lift the rack to its position, as shown on the left-hand side of cut, the dog holding it up, and then a semi-revolution of the wheel will leave the short side downward, but elevated a little above the ground, and the short side being the heavy side, it will remain in that position. Should the rocking of the car bring the wheel in contact with the ground, it would only raise the rack one or two teeth higher up.

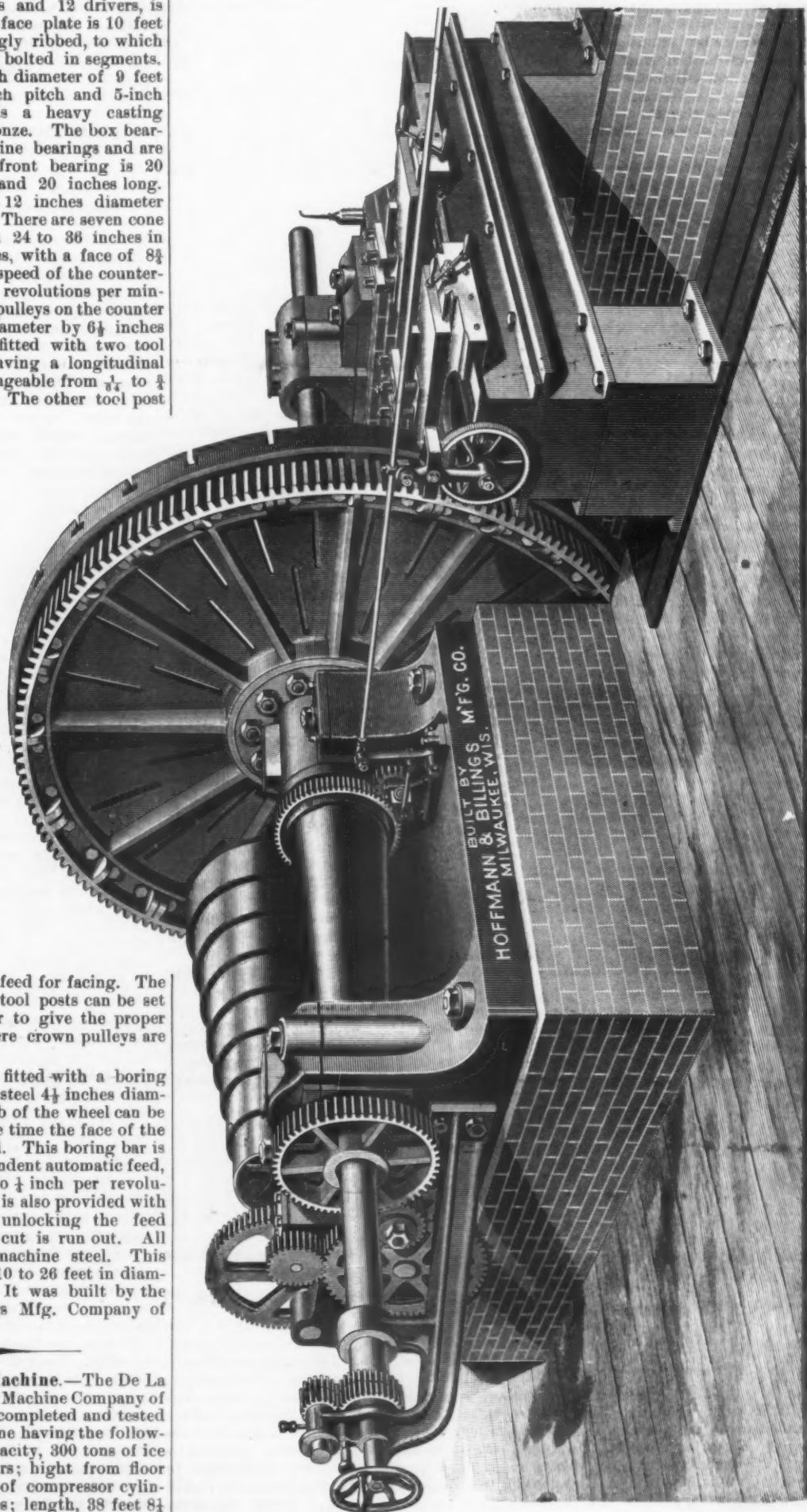
Alfred Ely & Co. of 18 South Holliday street, Neal Building, Baltimore, are the successors of Ely & Deming, Geo. F. Deming having retired on November 1, 1890. Among others they represent in the Baltimore market the Cleveland City Forge and Iron Company, Fitzsimons & Co., the Chapman Jack & Co., Cleveland, Ohio; W. S. Card & Co., Mansfield, Mass.; J. S. Ingalls & Co., Troy, Ohio, and the Cincinnati Corrugating Company. They are dealers in bar, band, hoop, sheet, angle, tee and boiler iron and steel, boiler tubes and rivets, Norway iron rivets, polished shafting, turn buckles, jack screws and American Russia steel. They are also putting in a stock of twist drills, stub steel files, taps and dies, reamers, milling and gear cutters, &c., and desire to receive manufacturers' catalogues and discount sheets.

Large Pit Lathe.

The weight of the large pit lathe of which we here present an engraving, with counter shaft, pulleys and 12 drivers, is 48,000 pounds. The face plate is 10 feet in diameter and strongly ribbed, to which the driving gear is bolted in segments. This gear has a pitch diameter of 9 feet $6\frac{5}{8}$ inches, $2\frac{1}{4}$ -inch pitch and 5-inch face. The spindle is a heavy casting fitted in phosphor bronze. The box bearings are same as engine bearings and are 6 feet apart. The front bearing is 20 inches in diameter and 20 inches long. The back bearing is 12 inches diameter and 12 inches long. There are seven cone pulleys stepped from 24 to 36 inches in variation of 2 inches, with a face of $8\frac{3}{4}$ inches for each. The speed of the counter-shaft is figured to 50 revolutions per minute. Tight and loose pulleys on the counter shaft are 46 inches diameter by $6\frac{1}{4}$ inches face. The lathe is fitted with two tool posts, one of these having a longitudinal automatic feed, changeable from $\frac{1}{16}$ to $\frac{1}{4}$ inch per revolution. The other tool post

11,200 pounds. Tandem compound Corliss engine, estimated 350 horse-power; high-pressure cylinder, 32 inches diameter,

pounds; number of cars required for shipment, 7; shipped April 14, 1891, to the Pabst Brewing Company, Milwaukee,



is arranged for hand feed for facing. The upper part of both tool posts can be set to any angle, in order to give the proper crown to pulleys where crown pulleys are desired.

The lathe is also fitted with a boring bar made of machine steel $4\frac{1}{4}$ inches diameter, whereby the hub of the wheel can be bored out at the same time the face of the wheel is being turned. This boring bar is fitted with an independent automatic feed, changeable from $\frac{1}{16}$ to $\frac{1}{4}$ inch per revolution of bar. This bar is also provided with an automatic stop, unlocking the feed mechanism when the cut is run out. All gear shafts are of machine steel. This lathe will turn from 10 to 26 feet in diameter by 6 feet face. It was built by the Hoffmann & Billings Mfg. Company of Milwaukee, Wis.

A 300-Ton Ice Machine.—The De La Vergne Refrigerating Machine Company of New York have just completed and tested a refrigerating machine having the following dimensions: Capacity, 300 tons of ice melted every 24 hours; height from floor line to top of dome of compressor cylinders, 24 feet 4 inches; length, 38 feet $8\frac{1}{4}$ inches; width, 9 feet; compressor cylinders, 20 inches diameter, 40 inch stroke. One double-throw hammered-iron crankshaft; diameter of bearings and pins, $13\frac{1}{2}$ inches; length, 14 feet $4\frac{1}{4}$ inches; weight,

40-inch stroke; low pressure cylinder, 52 inches diameter, 40-inch stroke. Total weight of machine complete, 222,200

Wis. In a short time they will begin work on a 500 ton machine for the Anheuser-Busch Brewing Association, St. Louis, Mo.

LARGE PIT LATHE, BUILT BY HOFFMANN & BILLINGS MANUFACTURING COMPANY.

Our Product of Iron and Steel.

James M. Swank, general manager of the American Iron and Steel Association, has just issued his annual report. The product of the leading lines of manufacture was as follows, in net tons:

Net tons of 2000 pounds. (Except nails.)	1888.	1889.	1890.
Pig iron including spiegel.....	7,208,507	8,516,079	10,307,028
Spiegeleisen.....	54,769	85,823	149,162
Bessemer steel ingots.....	2,812,500	3,281,829	4,131,535
Bessemer steel rails.....	1,552,631	1,691,264	2,091,978
Open-hearth steel ingots.....	352,036	419,488	574,820
Open-hearth steel rails.....	5,261	3,346	4,018
Crucible steel ingots.....	78,713	84,900	79,716
Rolled iron, except rails.....	2,397,402	2,570,127	2,804,829
Rolled steel, except rails.....	1,201,885	1,584,304	1,829,247
Iron rails.....	14,252	10,258	15,548
Pig, scrap and ore blooms.....	39,875	36,200	30,783
Kegs of iron cut nails.....	2,170,107	1,778,082	1,806,130
Kegs of steel cut nails.....	4,323,484	4,032,676	3,834,816
Kegs of wire nails.....	1,500,000	2,435,000	3,135,911
Iron and steel wire rods.....	313,341	407,513	511,951

Mr. Swank comments as follows on the history of last year's iron trade: "The year 1890 was an anomalous one for our iron and steel manufacturers in its relation to prices, as it was also for manufacturers of other products. The production and consumption of all leading articles of iron and steel, except steel rails, were not only much larger in 1890 than in any preceding year, but prices steadily receded from January to December. Many other manufactured products were produced and sold in exceptionally large quantities but at declining prices. About the beginning of the year prices also began to decline in Europe. It has usually been the experience of manufacturers that prices fall with a decreased demand and rise when the demand increases. The experience of many American manufacturers in 1890 was of a precisely opposite character. One explanation of the change is doubtless found in the fact that our productive capacity in all leading manufacturing industries is now so large that we are able to meet any extraordinary consumptive demands without creating that scarcity in supply which is essential to a rise in prices. The day for exciting booms in any American manufactured product seems to be over."

Mr. Swank estimates the approximate home consumption of pig iron as follows:

	Gross tons.
1887.....	6,808,386
1888.....	6,688,744
1889.....	7,768,666
1890.....	8,959,679

It is interesting to note that out of the imports of pig iron, during 1889 and 1890, of 148,759 and 134,955 gross tons, respectively, 99,482 and 101,167 tons, respectively, were spiegeleisen and ferromanganese. Mr. Swank summarizes as follows the position of

American Manufacture of Tin Plate:

About the 1st of October last, when the new tariff became a law, the United States Iron and Tin Plate Company, Limited, of Demmler, Allegheny County, Pa., commenced the manufacture of tin plates of best quality, and before the year closed the company had manufactured and sold about 50 tons of bright tin plates, the rise in the price abroad enabling them to compete with the dealers in foreign tin plates. This company have since continued to manufacture best tin plates as a

regular product of their works, and during the present year they expect to make both tin plates andterne plates in large quantities. They are now enlarging their rolling mill and their other facilities for this purpose.

P. H. Laufman & Co., Limited, of Apollo, Armstrong County, Pa., had made about 600 boxes ofterne plates for roofing between October last and the middle of March, but the company have recently greatly increased their capacity for the production of these plates and expect to actively engage in their manufacture from this time forward.

The Britton Rolling Mill Company of Cleveland, Ohio, are now building a tin-plate mill, and expect to be ready to supply tin plates in commercial quantities about the 1st of July next.

Norton Brothers of Chicago, extensive manufacturers of tin cans, commenced tinning plates in December last, using black sheets imported from Wales, but they have since obtained black sheets from Pennsylvania mills. They have nearly completed a rolling mill of their own, in which they will roll sheets for tinning. The firm started their tinning plant with a capacity of 50 boxes per day, and are now increasing their tinning facilities. This firm will not at once put any of their tin plates on the market, but will for some time consume all that they make. They use about 1000 boxes of tin plates daily.

Soon after the new tariff became a law the St. Louis Stamping Company, of which Hon. F. G. Niedringhaus, a member of the last Congress, is president, commenced making the best quality of tin plates for their own use in the manufacture of stamped specialties. The company have since continued to make tin plates regularly, partly from their own black sheets and partly from purchased sheets, but they have now well advanced toward completion new buildings and machinery for the production of a much larger quantity of black sheets and which will also greatly add to the tinning capacity of the present works. It is expected that the new works will be in operation about July 1 next. Some of the tin plates thus far produced have been made from basic steel manufactured at Chattanooga by the Southern Iron Company.

Somers Brothers of South Brooklyn, N. Y., have completed plans for the building of a tin-plate mill and have invited bids for the necessary machinery. This firm will probably consume in the manufacture of stamped specialties, in which they do a large business, all the tin plates they may make.

Other firms and companies are reported to be considering the advisability of engaging in the manufacture of tin plates andterne plates, but we confine our record of the inauguration of this new industry to information which we know to be authentic.

An interesting series of figures is that relating to

The Production of Street Rails,

concerning which Mr. Swank says: "The manufacturers have not been able to separate all the street rails from other rails which they made in 1890. The quantity of rails reported to us which were definitely known to be ordered and rolled for street railways in 1890 was 110,353 net tons, or 98,529 gross tons, showing a great increase over the production in 1889, when 78,534 net tons, or 70,120 gross tons, were made. Nearly all street rails are now rolled from Bessemer steel. The following table shows the ascertained production of street rails alone in the 17 years from 1874 to 1890, the figures for 1890 being probably a few thousand tons

under the actual quantity used for street railways:"

The Production of Steel Rails.

	Net tons.		Net tons.
1880.....	16,894	1886.....	48,009
1881.....	21,554	1887.....	57,362
1882.....	22,286	1888.....	50,345
1883.....	19,440	1889.....	78,534
1884.....	31,357	1890.....	110,353
1885.....	35,990		

The increase in the production has therefore been very rapid.

Electricity as a Motive Power.

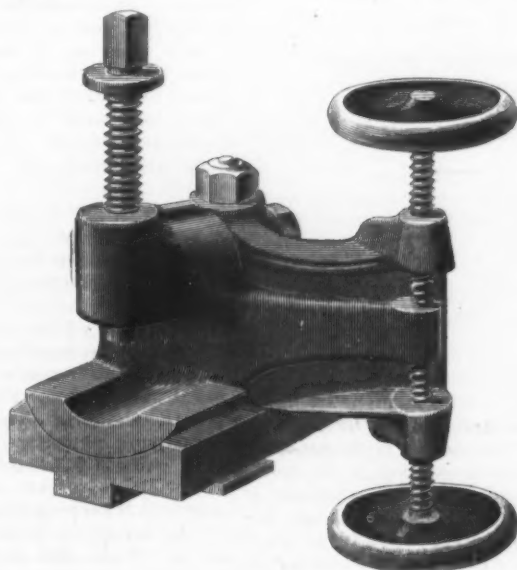
Superintendent Porter of the Census Bureau publishes a bulletin about the relative economy of cable, electric and animal motive power for street railways. It was prepared by C. H. Cooley, under the supervision of Henry C. Adams, the statistician of the Interstate Commerce Commission. While it is stated that it is too early to form a final judgment regarding the value of electric motive power for this purpose, yet the statistics throw considerable light upon the matter. The bulletin covers statistics of 50 lines of street railway, ten of which are operated by cable, ten by electricity and 30 by animal power.

The total cost of the ten cable roads, including equipment, was \$26,351,416; total number of passengers carried, 101,995,695; at a total cost of \$3,286,461. The operating expenses per car mile were 14.12 cents and the operating expenses per passenger 3.23 cents. The length of all tracks was 143 miles. The total cost of the ten electric roads, including equipment, was \$2,426,285; total track mileage, 67.22 miles; total number of passengers, 8,031,214, at a cost of \$326,961, or 13.21 cents per car mile and 3.82 cents per passenger. The operation of electric railways is less settled and uniform than either cable or horse railways. The total cost of the 30 horse car lines, with equipment, was \$22,788,277, with 552 miles of track; operating expenses for the year \$6,986,019, with 190,434,783 passengers; expense per car mile 18.16 cents and cost per passenger 3.67 cents. The expense per car mile on cable roads varies from 9.39 cents to 21.91 cents; on electric roads from 8.34 cents to 36.04 cents; on animal roads from 9.10 cents to 27.02 cents.

As far as the operating expense per car mile is an index of economy in operation, both cable and electric railways are cheaper than railways operated by animal power. It is noticeable, however, that electric railways, which have the least expense per car mile, have the greatest expense per passenger carried. The reason is that electric railways show a less number of passengers per car mile than either of the other classes. The cable railways were built at a cost per mile of street occupied of over seven times as much as the electric railways were. The density of passenger traffic is about six times as great upon the cable as upon the electric railways. The figures correspond to the generally accepted fact that cable railways attain their greatest efficiency where an extremely heavy traffic is to be handled. The railways operated by animal power hold an intermediate position, showing a cost and a density of traffic somewhat greater than the electric railways, but much less than that of cable railways. Of course this does not indicate that under similar conditions an electric line is less expensive to build and equip than a line operated by horses, but simply that among the roads included in this exhibit the electric lines are of a less expensive class than the horse lines. The latter include a number of the largest and most expensively equipped lines in the country.

Adjustable Lathe Tool Holder.

This attachment is designed to give to an ordinary gibbed carriage engine lathe all the advantages of an elevating carriage without its usual objectionable features of decreasing the amount of swing over the carriage and losing stiffness and solidity. It has the advantage of being quickly and easily applied. By slipping into the tool block in place of the usual tool post, and tightening the clamping nut on the top, it is rigidly secured, and gives a solid support of metal underneath the cutting tool direct to the ways. The holder proper is of cast steel, and being open on the side will take any depth and thickness of tool up to $1\frac{1}{2}$ inches square, if necessary. If desired, the cutting tool can be placed much nearer the face plate or back rest than is usual, the troublesome ring which is usually dropped over the tool post being dispensed with. By having an adjusting



PARKER'S ADJUSTABLE LATHE TOOL HOLDER.

screw both above and below the tilting lever all lost motion is taken up and it is under perfect control. The vertical range of adjustment at the point of the tool, as usually set, is $\frac{1}{4}$ inch and seems to be ample to meet all ordinary requirements. The tool can be elevated or depressed while taking a cut, and this is its most valuable feature, the advantages of which are obvious. This tool is manufactured by the Parker & Knight Company of Baltimore, Md., in one size only, adapted to lathes from 16 to 18 inches swing.

Too Much Favor to Cast Iron.

The bill which has passed the New York Assembly and is now before the Senate Committee on Cities, providing for a revision of the building laws, is being protested against by architects, engineers and builders, because it would tend to discourage the use of wrought iron, rolled iron and rolled steel in buildings in place of cast iron. The signers of the remonstrance claim that the law has been drawn in the interest of New York foundries, and that public policy would rather justify a discouragement of the use of cast iron.

Among the signers are Theodore Cooper, Charles Macdonald, Edmund Hayes, C. S. Maurice, Alfred P. Boller, R. P. Stats, Chas. E. Emory, J. A. L. Waddell, Wm. H. Burr, R. M. Hunt, Leopold Eidlitz, J. C. Cady & Co., McKim, Mead & White, Babb, Cook & Willard, A. M. Wellington, D. McN. Stauffer, Rowe & Baker, M. Lewinson, G.

A. Just, A. F. D'Oench, C. L. W. Eidlitz, Milliken Bros., Cooper, Hewitt & Co., S. D. Hatch, De Lemos & Cordes, J. August Lienau, Wm. Yuhles, James E. Ware, the Phoenix Iron Company, Charles P. H. Gilbert, Carrere & Hastings, A. L. C. Marsh, James M. Farnsworth, John B. Snook & Sons, D. & J. Jardine, Buckman & Deisler, R. H. Robertson, William A. Potter, Jr., James Brown Lord, Edward H. Kendall, Brunner & Tryon, Frank Freeman, Rossiter & Wright, Carnegie, Phipps & Co. (Limited), Passaic Rolling Mill Company and the Pottsville Iron and Steel Company.

Limit of American Agricultural Production.

In the forthcoming April report of the Department of Agriculture the statistician will reply to some recent arguments made in magazine articles and elsewhere

prospect of decrease. Annual fluctuations, from climatic causes, will produce variation in price, which the distribution of harvests of different climates through the year and increase of international transportation facilities will help to equalize. The United States will continue to produce a surplus for export until the wheat culture of the plains shall have given place to more varied and profitable culture and increasing numbers of non-agricultural population shall require for bread the entire crop. It is proper to say that the tendency is towards a better distribution of crops and to higher prices and greater profits. The proportion of agricultural labor will decrease, non-agricultural will increase, agricultural production will be more varied, rural intelligence and skill will advance, and the farmer be in better position to demand and secure an equitable share in the net proceeds of national industries.

NEW PUBLICATIONS.

AN INTRODUCTION TO THE STUDY OF METALLURGY. By W. C. Roberts-Austen. Published by J. B. Lippincott Company, Philadelphia.

Professor Roberts-Austen, who is connected with the British Mint and with the London School of Mines, has followed in the work just published a line of teaching which differs widely from that usually adopted by lecturers and authors of text books. He has not attempted to describe in detail the methods pursued in producing merchantable metals or the appliances used. He has taken somewhat broader ground, and deals in a more general way with the properties of the metals, chemically and physically. We fear, however, that this tendency has led him, in some instances at least, to the discussion of very abstruse questions, like the condition of carbon in steel, the constitution of alloys, &c. The discussion of such questions should be reserved for higher courses of metallurgy, and hardly deserves ventilation in an elementary work.

Professor Roberts-Austen divides his work into a number of chapters, of which one of the first deals in an excellent manner with the physical properties of metals, although here, too, he allows his familiarity with abstruse questions to get the better of him. He deals only lightly with the chemical side of metallurgical operations, which should occupy a large share of even the most elementary work. In his introduction he says that "the methods of metallurgists vary greatly from those of chemists, who, however, frequently fail to appreciate the nature of the difference." He recognizes, therefore, that metallurgical chemistry is a study by itself, and yet he practically ignores it. We cannot understand such a system, which one of the final chapters—that on typical metallurgical processes—certainly does not justify. The process at Argo, Col., is certainly not a typical process, and the sooner we get rid of the old Welsh method of copper smelting the better. The Freiberg methods, with their endless complications, are enough to frighten any young metallurgist. It seems to us far easier to teach him the comparatively simple reactions in the blast furnace, whether it be smelting for iron, copper or lead, give him an idea of the chemistry of the Bessemer converter and the puddling furnace; let him learn what goes on in zinc distilling, in lead smelting, in roasting and calcining, and some of the simpler wet processes. The student should learn above all that he must watch for the chemical reactions, as they affect other metals and substances in his material besides the one which he is aiming to produce in required purity and quantity. He must learn to know that the presence of other substances may involve heavy losses,

and intended to show that the agricultural production of this country will not keep pace with the increase of population. Mr. Dodge summarizes his conclusions as follows: This country has not reached the limit of agricultural production. It has not even approached it. One-third of its area is either too dry or too wet for present cultivation, awaiting irrigation or drainage. Of the other two-thirds there is much not included in farms; its farm area is not all utilized, and the cultivated area may become far more productive. Farm labor is not sufficiently effective; its distribution could be more harmonious and profitable. Prices of cereals have sometimes been reduced by oversupply. Cotton, with a product of 22,000,000 bales in three years, a quantity greater than the production of six years prior to 1860, begins to decline in price. At the same time, there is a failure to produce the sugar required, though there is cane land sufficient for an ample supply, and beet sugar lands *ad libitum*, without mentioning the possibilities of sorghum. There might be tens of millions of dollars annually coined from various fibers, large extension of fruit growing, and introduction of many economic plants to be made the basis of new industries. The material now produced for food consumption might be put in more attractive form for market, and a large contribution levied upon the gastronomic and aesthetic tastes of consumers. It is not true that the wheat of the world is declining. It is not difficult to prove the existence of 2,300,000,000 bushels as an average, and there is no

or lead to endless complications. It is the chief business of the metallurgist not only to know how the presence of other substances affects the quality and therefore the commercial value of his product, but to guard against their introduction into it during every step and to modify the method in accordance therewith.

The subject which Prof. Roberts-Austen has chosen are well treated, but we believe that he has not chosen wisely in many respects, and that he has committed serious sins of omission. He has succeeded in one important point, and that is that he has kept up closer to current technical literature than the majority of college professors succeed in doing. We recognize gratefully the absence of illustrations inherited from text books of the first half of this century, those illustrations which have gone on living cheerfully in metallurgical text books long after their models have become extinct in practice. The only example of antiquated plant is the Whitwell stove illustrated on page 235, which seems to represent the old stove 25 feet high. The author, however, adds that the height has been recently increased greatly. It might have been better to replace the older drawing by a more modern design.

FOURTH ANNUAL REPORT OF THE INTERSTATE COMMERCE COMMISSION, December 1, 1890. Washington: Government Printing Office, 1890; 8vo, 443 pages.

Railroad transportation in the United States involves the interests of 700,000 railway employees and 300,000 other people indirectly connected with the business, or one-twelfth the adult male population of this country. It includes the carriage of 540,000,000 tons of freight and 472,000,000 passengers. The duties of a regulating commission for this business are complicated and overwhelmingly exacting, and their reports contain information of singular importance to the nation, since they contain discussions and decisions which affect almost every individual. Among those considered in the fourth report of the Interstate Commission are the methods of treatment by the commission of judicial and administrative questions, such as the rights of carriers, reasonable rates, the authority of courts, the classification of freights and the protection of stockholders. The effects of rate wars and rate cuttings and their regulation, long and short hauls, ticket brokerage and commissions, railroad consolidation and the needed amendments to railroad legislation by the Government are also set forth with the wisdom which the comprehensive experience of the commission has given it since its organization.

One-fourth of the report is occupied with the decisions made on the numerous questions which have been brought before the commission. There is also a very compendious report of the changes that have been made in classifications and freight rates on the different railroads, and also the details of railroad regulations in the United States and foreign countries. The volume closes with the decisions which have been made by the United States Courts holding that witnesses must testify in regard to alleged violations of the law.

Among the facts mentioned in this report concerning railroads in this country the following are of general interest:

Each inhabitant of the United States in 1889 traveled by railroad, if the passenger mileage were equally divided, 175.58 miles, and 1041.32 tons of freight was carried 1 mile for each person.

There were 310 passengers killed and 2146 passengers injured, or one passenger killed for every 1,523,133 carried and one passenger injured for every 220,024 carried. But there were 1972 employees killed and 20,028 injured during the year, or one death for every 357 and one injured for

every 35 employed. The special risks to trainmen are indicated by the rate of one death in 117 engineers, firemen, conductors and other train hands, and one injury for every 12 men thus employed.

The total stocks and bonds representing railway property in the hands of the public was \$7,366,745,677. Of these stocks

61.67 per cent.	..... paid nothing in dividends.
8.62 per cent.	paid less than.....4 per cent.
7.28 per cent.	..... paid from 4 to 5 per cent.
9.11 per cent.	..... paid from 5 to 6 per cent.
4.28 per cent.	..... paid from 6 to 7 per cent.
4.41 per cent.	..... paid from 7 to 8 per cent.
2.40 per cent.	..... paid from 8 to 9 per cent.
2.23 per cent.	paid 9 per cent. and upward.

A corresponding statement concerning the total railroad bonds is as follows:

28.19 per cent.	of the whole paid nothing
0.56 per cent.	of the whole paid under 1 per cent.
1.13 per cent.	of the whole paid from 1 to 2 per cent.
2.07 per cent.	of the whole paid from 2 to 3 per cent.
6.97 per cent.	of the whole paid from 3 to 4 per cent.
13.95 per cent.	of the whole paid from 4 to 5 per cent.
25.66 per cent.	of the whole paid from 5 to 6 per cent.
19.59 per cent.	of the whole paid from 6 to 7 per cent.
10.26 per cent.	of the whole paid from 7 to 8 per cent.
1.02 per cent.	of the whole paid 8 per cent. and upward.

RAND, McNALLY & Co.'s BUSINESS ATLAS AND SHIPPERS' GUIDE OF THE UNITED STATES, Canada and Mexico, with maps of all foreign countries. Bound in heavy boards; half morocco; 334 pages. Size of page, 15 x 21 inches. Price, \$7.50 per copy, at 166 and 168 Adams street, Chicago, or 323 Broadway, New York.

The Business Atlas for 1891 is radically changed in both form and contents from previous issues. The maps are larger and plainer, the increased size of the pages enabling each State to be represented by a single or double page, instead of dividing the important States into sections, as heretofore. The coloring of railroad lines separately is a feature found in no other atlas. By means of these colors a railroad once located on a map can be traced from end to end and through all its junctions with other railroads without a moment's loss of time and with a degree of certainty otherwise impossible. The county boundaries are also outlined. By means of a ready-reference index any county or town in the United States can be found on the maps instantly, and opposite the name of each place in the index is shown its population for 1890, what county it is in and how it can be reached by mail, express or telegraph. The names are also given of over 125,000 places that are not post offices or railroad stations, together with their nearest railroad station and post office. In looking over this atlas it would seem as if it had been brought as near to perfection as man can attain in facilitating the work of shippers.

Professor Morgan's superb steam yacht Corsair, just launched from Neafie & Levy's yard in Philadelphia, is built of steel plates, with iron frames and deck beams. Her dimensions are: Length over all, 238 feet; on water line, 204 feet; beam, 27 feet; depth of hold, 16 feet 6 inches; molded depth of hold, 18 feet 1 inch; draft of water, 13 feet. She will be supplied with a vertical triple-expansion direct-acting engine, with cylinders 21, 33 and 54 inches respectively. The stroke is 30 inches. Steam will be generated in two steel return tubular boilers, and her horse-power guaranteed by the builders is 1900. Mr. Webb, by whom she was designed, guarantees the speed to be 16 knots, but it is believed she will be much faster. Modern steam yachts have expanded to the dimension of old-time steamships.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., April 28, 1891.

The Marquis Imperiali di Fracavilla, who holds up the Italian end of the relations between the United States and the kingdom of the Adriatic Peninsula, has communicated to his Government some very undiplomatic "inside information" which the stately Fava omitted or failed to discern, and which has operated with wet blanket effect upon the ardor of the Government and people of Italy and their sympathizing friends in this country. The Marquis has told his Government through correspondence that the American navy, what there is of it, is in efficient and formidable condition for active service, and is manned by officers and men of high skill and experience, many veterans of the late war. He also intimated that the Americans evinced no uneasiness over the threat of sending a fleet of ironclads into their waters, and stated that they would find some means of meeting the emergency. It is not pretended that the American navy is as formidable in armored ships and numbers as the Italian, but Rudini, on the intelligent diagnosis of the case by Imperiali, has concluded that it is not a thing to be fooled with.

The lesson of the recent diplomatic breeze has had its beneficial effect in pointing out the necessity of continued and vigorous work on naval design and construction. In the light of the recent criticism and unfavorable comparison of American and English typical war ships by some of the naval authorities of the British Naval Institute, the new ships of the navy are doing work in the way of speed on long voyages which it is thought will correct some of the British comments. The Navy Department is keeping a very complete record of the steaming performances of all the ships. When the data has reached the point of completeness it will be carefully collated, and will make an interesting chapter in the history of the progress of naval construction in the United States which will let the world know whether we have made advances on the models of the war ships of other countries or not.

The Department authorities are very well satisfied with the work of the new steel cruiser San Francisco on her voyage to Chili. She made such excellent speed on her trial trip that the Government has been much interested in watching her under the test of a voyage of 6200 miles, the distance from San Francisco to Valparaiso. The Department allowed her 20 days, or an average of 313 miles in 24 hours, or 13 miles under ordinary draft. Her commander was instructed to put her to a rigid test for a fast steam some time during the voyage. Between San Francisco and Payta she steamed 4500 miles in 14 days or 321 miles a day. The work of the white squadron was also satisfactory and will form part of the data of speed of the new ships.

The annual statistical report of the American Iron and Steel Association has made its appearance. What strikes the official world of Washington with particular force is the fact that in 1882 England had almost double the iron product of the United States, or 8,586,680 against 4,623,323 gross tons respectively, whereas, in 1890, or in a race of only eight years, England falls to the rear, producing 8,000,000 to this country's 9,203,000 gross tons. The officials ascribe such flattering results to the fostering influence of the existing economic system of the United States and the stimulus and protection which it gives to iron and steel as well as other industries.

An Important Silver-Lead Ore Ruling.

In the protests of a number of proprietary interests against the rate of duties on certain silver lead ore, the United States General Appraisers have rendered an important decision. The issue presented is the mode of determining the classification of certain silver-lead ores. It has been agreed among the parties interested that ores of this character are to be designated for duty by the name of the mineral which is the component of chief value. But the appellants contend that the methods by which the classifying officers determine the value of the silver and of the lead in the ore are unjust and oppressive and contrary to the instructions of the Treasury Department. The appraisers say:

The ores in question are dutiable under the act of October 1, 1890, as follows: "Lead ore and lead dross, one and one-half cents per pound: *Provided*, That silver ore and all other ores containing lead shall pay a duty of one and one-half cents per pound on the lead contained therein, according to sample and assay at the port of entry." That is, that lead ore shall pay \$30 per ton gross and silver ore 1½ cents a pound on its contents of lead, the silver being exempt from duty.

The citation of two cases will show the importance of securing accurate data in determining whether an ore is a silver or lead ore. In his report on the protest of the St. Louis and Zacatecas Company the surveyor at St. Louis gives his determination of the values in 22,000 pounds of ore as, silver, \$230.42, and lead, \$231.88, thus making it a lead ore dutiable at \$30 a ton, which is a duty of about 5 cents a pound on the lead in the crude ore. On another invoice of this company a duty of \$330 was assessed upon the crude ore containing 22 ounces of silver and 31.5 of lead, and valued in all at \$331.10. The duty on the lead in the ore in this instance, also, is nearly 5 cents a pound, or about two and one-half times as much as the duty provided for lead in pigs and bars.

The appellants complain that classification was determined upon assays made from "grab samples," and upon a valuation of the lead in the ore at 1 cent a pound less than the value of bar lead in New York. In the reports of collectors upon the protests one or the other of these allegations, and sometimes both, are either admitted or left uncontradicted.

The honorable Secretary of the Treasury prescribed certain rules for the sampling of silver-lead ores. He styled the "grab process" a very irregular method of sampling, and ordered that "upon the unlading, and at the time of unlading, the officer of the customs assigned to that duty shall supervise the work, and shall obtain proper and adequate samples from those taken for commercial purposes by the importer or consignee—that is to say, they shall be taken in the manner approved and practiced by miners in the handling and reduction of ores, by thoroughly mixing and quartering every tenth shovel or more, repeating the operation until the usual commercial sample be obtained."

In testifying before the board, representatives of both importing and domestic interests all agreed that the "grab" sample is utterly unreliable and that in such a process the chances are against the rights of the importer. It appears, therefore, that collectors who have sampled according to this method have not only violated the instructions of the Department, but have committed an act of manifest injustice to the importers. The board is of the opinion that invoices covered by protests on this point should be reliquidated, and that in the absence of accurate official data the assays upon which the ores were sold and purchased should form the basis for reliquidation. It appears from the testimony that invoice weights are accepted by the custom houses on the frontier because of the inconvenience and expense of re-weighing the ore. It would be equally proper to accept commercial samples or assays where the Government has not made due provision for securing accurate official data.

After determining the amount of silver and the quantity of lead in the ore, it becomes necessary to ascertain the value of the silver and of the lead in order to decide whether the ore should be classified as a silver or a lead ore. In the Department instructions already referred to, the honorable Secretary advises that in the absence of more accurate data in the invoice or otherwise the value of the silver component be rated at 95 per cent. of the latest known value of silver bullion in the New York market, and the lead component at the latest known value of bar lead in the same market less 1 cent per pound. It is contended by

importers that the values should be based on the values of the minerals in the crude ore in the mines of the country of exportation.

The question of whether an ore is a silver or a lead ore is not a matter of foreign market value, but is a fact to be determined, if possible, at the time and place of importation. In such markets for ore as El Paso and San Francisco there should be no difficulty in establishing the value of these two minerals in the crude ore. It appears, however, that collectors of customs at these ports, instead of endeavoring to obtain more accurate data, have construed the advice of the Department to be a mandatory order and have taken the value of the silver to be 95 per cent. of the value of silver bullion in New York, and the value of the lead to be the value of bar lead in that market less 1 cent a pound.

There is no complaint as to the valuation of silver, which, as a precious metal, has an almost uniform standard of value throughout the country. But it is contended, and the testimony of representatives of both importing and domestic interests establishes the fact, that an injustice has been done to importers of ores at El Paso in assuming the value of lead in the ore at that point to be only 1 cent a pound less than the New York price for bar lead. Considering the evidence on this subject as to the value of lead at the time, the board is of the opinion that the invoices covered by protests on this point from that port should be reliquidated on a value of not exceeding 2½ cents a pound for the lead in the ore. The invoices covered by protests from other ports should be reliquidated on the basis of the value of lead in the ore at the time and place of importation.

The questions involved in these cases are largely administrative matters. In such matters the board, while having the power to correct injustice, is without authority to prescribe regulations. It is, therefore, deemed inexpedient in this decision to treat the subject in other than a general way, leaving to the appellants the right to further protest should classifying officers fail to be guided by the principles that we have enunciated.

Among the reappraisements of values by the United States General Appraisers were the following: Steel sheets, cold rolled, from Sheffield:

Bessemer sheet steel, for corsets, &c: 4 by 27 G, 3½ by 24 G, 3 by 27 G, 3½ by 27 G, entered at \$12 15/ per ton. No advance. 3 by 29 G, 4 by 29 G, 3½ by 29 G, 3½ by 29 G, entered at \$13 5/ per ton. No advance.

Hot-rolled Bessemer steel strips: 3½ by 21 G, 3½ by 21 G, 4 by 21 G, 4½ by 21 G, entered at \$13 5/ per ton. No advance. Add for cost of bands, cases, &c.

The Tennessee Coal, Iron and Railroad Company.

The annual report of the officers of the Tennessee Coal, Iron and Railroad Company will be read with particular interest, since it is individually the largest of the Southern companies, and since the proposition to sell the Tennessee property for \$2,500,000 has brought out considerable discussion. The magnitude of the operations of the company may be judged from the following table, which covers the fiscal years named, ending January 31:

Divisions.	1888-89. Tons.	1889-90. Tons.	1890-91. Tons.
Tracy City, coals....	413,631	367,851	351,563
Tracy City, coke....	154,414	133,626	113,118
Cowan, pig iron....	18,112	24,549	13,331
South Pittsburg, pig iron.....	56,770	61,702	67,210
South Pittsburg, coals....	73,659	136,920	160,319
South Pittsburg, coke.....	26,346	45,251	50,346
Birmingham, pig iron....	47,770	39,977	47,071
Birmingham, coke....	79,786	63,016	77,353
Pratt Mines, coals....	888,247	1,094,249	1,061,958
Pratt Mines, coke....	196,050	208,013	257,167
Ensley, pig iron....	78,069	144,420	132,766
Inman Mines, iron ore.....	126,271	124,574	109,506
Totals.....	2,159,208	2,518,148	2,451,070

Thomas C. Platt, speaking generally of the condition of the iron trade, remarks:

"The price of iron had steadily declined from the beginning of the past year, and is to-day about \$2 per ton below the market price of February last. The number of new furnaces that have been put into blast in Alabama, Tennessee and Western Virginia during the past year has largely increased the output of foundry

and mill iron, and it is believed they will in future so fully supply the demand for those grades of iron as to prevent any considerable advance in its price. It will therefore be, to some extent, a contest for the survival of the fittest. Furnaces which are well located for the manufacture of cheap iron will continue to reap a profit from their operation, while those that are not so favorably situated must sooner or later yield the field to their more fortunate competitors. We have no hesitation in expressing the opinion that the several plants owned by the Tennessee Coal, Iron and Railroad Company can successfully compete with any coal and iron plants located within the Southern States.

"During the past year my attention has been called to the subject of the washing of coal for coking purposes. I am fully convinced that the company should, as early as practicable, adopt that policy. I think the time has arrived when it behooves every manufacturer of iron to adopt every judicious improvement that will give him the better fuel and the clearer ores. The comparative results obtained by those who use a comparatively pure coke and an ore free from alumina, sandstone and slate are such as to leave no room for doubt as to the policy which ought to be pursued in this respect."

The total earnings of the company for the last fiscal year amounted to \$663,889.78, of which \$453,988.54 was expended for interest on bonds, floating debt, sinking funds and dividends on preferred stock, leaving a balance of \$209,901.24, equivalent to a dividend of 2½ per cent. on the common stock. All of it, however, has been absorbed in betterments and in improvements, and is to be written off to the depreciation account and to reductions in valuation. The same course was pursued last year with accumulated profits of \$327,572.59, so that since 1883 \$1,990,385.85 has been put into the business. The total capital expenditures from October 1, 1886, to January 31, 1891, have been as follows:

	Oct. 1, 1886, to Jan. 31, 1890.	Feb., 1890, to Jan. 31, 1891.	Total.
Ensley division....	\$1,276,474.28	\$50,275.94	\$1,326,750.22
Pratt Mines division....	732,514.87	37,036.01	819,550.88
S. Pittsburgh division....	368,590.20	75,847.63	444,437.83
Birmingham division....	7,157.10	21,541.94	28,699.04
Cowan division.....	521.28	811.82	1,333.10
Tracy City division....	407.36	1,400.04	1,807.40
Chgd through Nashville books to land acct..	47,986.35	6,595.34	54,581.69
Totals.....	\$2,483,631.44	\$202,508.72	\$2,686,140.16

The company now have outstanding \$5,187,844.73 in bonds, 90,000 shares of common and 80,000 \$100 shares of preferred stock.

The report of General Manager of the Alabama Division H. G. Bond shows that at the Alice furnaces, on a total output of 47,071 tons, there was realized a net profit of \$46,993.82. The Ensley division, with an output of 132,766 tons, made a profit on the iron of \$172,024.19, swollen by other items to \$193,497.38, the capital expenditures for the division being \$63,690.94. The iron made from July 1, 1888, to April 1, 1889, showed an average cost of \$9.13, while the cost of that made in 1890 was \$9.67, the increase being due to unusual and extraordinary expenses charged to working account and to an unprofitable contract on brown ore to be delivered at Ensley at \$1.55 per ton with a guarantee of 50 per cent. metallic iron and not more than 12 per cent. of silica.

The average price realized for the iron was apparently \$10.96.

The most profitable part of the business of the company is that of the Pratt Mines division, which showed a profit of \$310,711.26, the capital expenditures having been \$38,824.50.

Mr. Bond closes his report with the following suggestion: "While iron and coal are sold at the present prices I think there should be a general reduction in the price of labor of at least 10 per cent. This can only be effected through a general agreement with the coal operators and iron masters of the district. I think that strenuous efforts should be made to such end, as the price now paid for labor at the furnaces and in the coal mines is largely in excess of that for similar work in other similar districts."

The report of the general manager of the Tennessee division does not go into detail as to the costs, but the sums elsewhere reported certainly show only small returns. The Cowan division shows a loss of \$5,380.12. In the South Pittsburg division there was a profit of \$1,483.56, the profit on pig iron having been \$34,488.66 on an output of 67,210 tons. The Tracy City division made a profit of \$97,585.54, the profit on coal having been \$81,920.49 and the profit on coke \$4730.62. During the next year the fixed charges to be cash out of pocket will be \$433,810, or \$36,150 per month.

San Francisco News.

The molders' strike still continues to attract a good deal of public attention. An assertion has lately been made by the friends of the molders that they had 13 out of 16 foundries. This is not true. The majority of the foundries do not employ union molders, and none of the large foundries do. Under circumstances of this kind even a numerical majority of foundries where union molders were employed would mean nothing, as they would have only a minority of the men. There is a prospect that the strike, which is little more than nominal, may soon come to an end. Since the federation of manufacturers has been organized the question of the molders' strike has come prominently before its members. In fighting this strike very serious injuries have been inflicted on our industrial system and there is a prevalent impression that it is responsible for a good deal of the dullness in trade that is still felt. It has come near causing a general strike among the building trades owing to the refusal to work on buildings using non-union iron. The bricklayers on Thursday last decided not to sustain the boycott as proposed, but now it is said that this was done on account of some technical violation of rules in passing the resolution originally and that the proposed boycott will be sanctioned at the next meeting. The trouble is thus still kept open.

The carpenters met and resolved to have arbitration proposed. If it could not be settled in this way they then would boycott non-union iron. The building trades are more independent and conservative than most others of the San Francisco trade unions. They have lately formed a federation of their own and are reluctant to go to extremes. The non-union molders in the employ of the rolling mills have struck. Why, it would be hard to say. An attempt will be made this week to resuscitate the iron trades' conference. It was composed of representatives of the unions engaged in iron manufacture and had for its object the purpose of inducing Californians to patronize California foundrymen and machinists. They, of course, worked hand in hand with the manufacturers until the occurrence of the molder's strike, since when the organization has

been practically defunct. Since that time M. H. De Young of the *Chronicle* and others have sent East for their iron, and a great deal of work has been lost to the manufacturers of this city. As regards Mr. De Young it is only just to state that he claims that he could not get some of his work done in this city. This is denied by some of the representatives of the iron trade, and there was evidently some misunderstanding in the matter. The revived society will do all in their power to induce builders and others to have their work done at home.

The Custom House valuation of iron and steel and their leading manufactures imported for the month of March at this port is as follows:

Pig iron, 1899 tons.....	\$27,277
Scrap, 2875 tons.....	35,200
Bar iron, 290,560 pounds.....	5,207
Tin plate, 4,556,287 pounds.....	151,963
Steel ingots, 358,907.....	17,622
Sheet and plate iron, 1,225,335 pounds..	19,902
Wire and wire rope, 184,929 pounds....	9,600

This makes a total of \$266,856, worth duty paid in this market about \$500,000.

For a week or so past there has been a pretty general complaint of dullness in this market, and no one seemed to be able to tell what to attribute it to; but the fact that when there seemed to be the very best possible prospects for crops something happened to set them back has made people cautious, and we do not expect any very phenomenal activity until a couple of weeks more has elapsed. Then, again, floods last year created such havoc in some districts that the people have not yet quite recovered from the effects of them. The hardware and iron—indeed, all the metal—markets may be set down as temporarily quiet. There has been no special movement in prices since my last advices.

There is quite an interest in the matter of ramie culture in this city. A good deal will be planted during this year. Machines for cleaning it are in order. There is one here which claims to do the work thoroughly, and indeed appears to do so. The best, if it really did the work required of it, would give a fortune to the lucky inventor.

Overcoming Obstacles to Southern Trade.

One of the most successful business men in Buenos Ayres is Fidel G. Pierra, a native of the United States, who takes a lively interest in promoting the trade of the two countries. He points out the necessity for adequate steamship and banking facilities, but speaks of the advantages already secured by European traders who early entered the field. He says: "To insure success to any American line it must be established upon a footing as good, or nearly as good, as that of the large European lines, and this is an enterprise of considerable magnitude. It would be very foolish to suppose that during the first two or three years of its existence the earnings of any line of steamers between this country and the United States would be enough to pay even the smallest dividend upon its stock. The trade now existing between the two countries is utterly insufficient to afford such a result, and its development will not be a matter of a few months. There is, I firmly believe, ample room for a large increase; but this will require at least two or three years, maybe four or five." To contend successfully with existing difficulties, Mr. Pierra advises the formation of stock companies who shall act as export agents for such manufacturers as choose to make with them the necessary arrangements for that purpose, and to have branch offices in the large commercial ports of the Spanish American republics. Doing the business

through the companies, the manufacturer, instead of giving credit to the foreign buyer, will give it to the former, and the risk of the business will be by that arrangement greatly diminished, as the companies will always have better facilities than the manufacturer to inform themselves respecting the solvency of the buyers.

New Freight Rates.

The Queen and Crescent route have issued Tariff No. 28, giving rates on pig iron in carload lots. The advances made in the new tariff are effective on May 4, while the reductions took effect April 27. To the leading points the rates are as follows, per ton of 2268 pounds:

To	From			
	Chattanooga, Tenn.	Birmingham, Ala.	Florence and Sheffield, Ala.	Anniston, Ala. (via Attalla).
Akron, Ohio.....	\$3.35	\$3.85	\$3.80	\$3.85
Atchison, Kan.....	5.00	5.00	.....	5.00
Chicago, Ill.....	3.60	3.85	3.60	4.10
Cincinnati, Ohio.....	2.25	2.75	2.50	2.75
Cleveland, Ohio.....	3.35	3.85	3.60	3.85
Columbus, Ohio.....	2.85	3.35	3.10	3.35
Detroit, Mich.....	3.60	3.85	3.60	4.10
East St. Louis, Ill.....	3.00	3.25	.....	3.25
Fort Wayne, Ind.....	3.25	3.60	3.35	3.60
Kansas City, Mo.....	5.00	5.00	.....	5.00
Louisville, Ky.....	2.25	2.50	2.25	2.75
Memphis, Tenn.....	2.00	2.00	.....	2.00
Milwaukee, Wis.....	4.00	4.25	4.00	4.50
Omaha, Neb.....	5.84	5.84	.....	5.84
Pittsburgh, Pa.....	3.70	4.40	4.15	4.40
Springfield, Ill.....	3.45	3.90	3.65	4.15
Steubenville, Ohio.....	3.70	4.40	4.15	4.40
St. Louis, Mo.....	3.00	3.25	.....	3.25
Terre Haute, Ind.....	2.80	3.25	3.00	3.50
Wheeling, W. Va.....	3.70	4.40	4.15	4.40

The buildings intended for the Williamson Free School of the Mechanical Trades, for which the late Isaiah V. Williamson gave \$2,000,000, are now in course of erection 10 miles from Philadelphia, and applications for admission are now being received. The superintendent's residence is built of granite and cedar wood. The main edifice is the administration building. This is constructed of brick and granite, and is of the Byzantine style of architecture. The shop for industrial trades is of brick. Next to this is the boiler house, engine and dynamo room and laundry, overtopped by a chimney stack more than 100 feet high. The three dormitory buildings will also be of brick. The architects of all the buildings are Furness, Evans & Co. In accordance with the stipulations in Mr. Williamson's gift, the sum of \$425,000 of the \$2,000,000 is to be used in the purchase of land, the construction of the buildings, &c. The price of the land was \$47,000, and \$250,000 will be expended on the buildings, and the balance on improvements and extensions. The remaining amount, \$1,700,000, is an endowment fund, and only the interest can be expended. The course for the mechanical trades will be from two to three years.

A tunnel 6000 feet long to drain a subterranean lake in the Centralia coal basin, Pennsylvania, has just been completed. An extension to the coal lands on the Girard estate will make the total length 9800 feet, which is second only to the Hoosac Tunnel in Massachusetts and the Sutro Tunnel in Nevada. The companies benefited will be the Locust Mountain Coal and Iron and Philadelphia and Reading Coal and Iron companies, the Girard estate and L. A. Riley & Co.

Maximum Steam Jacket Efficiency.

The discussion of this question by Prof. Robert H. Thurston is embodied in a pamphlet reprinted from the journal of the Franklin Institute. Computations show that "the ideal steam engine, such as is treated of in the purely thermodynamic study of the steam engine, has a lower efficiency with than it has without a jacket." The results as given in tables, and as illustrated by curves plotted from the tables, "show that the jacketed engine is always more wasteful than the ideal unjacketed engine." This is from the theoretical consideration of the question. The pamphlet states that "practically, however, the reverse is usually, though probably not always the case, and the use of the jacket is often found to be productive of a real and sometimes of large economy. It is thus obvious that the advantages of the employment of the jacket come of those conditions which distinguish so markedly the real from the ideal case in steam engine economy."

The real efficiency of the steam jacket forms the second part of the pamphlet, and is based upon the report of a committee appointed by the British Institution of Mechanical Engineers to investigate the subject of the steam jacket. The experiments were made with a single cylinder non-condensing Corliss engine, a single cylinder condensing Corliss engine and a horizontal compound condensing tandem engine. Professor Thurston reviews the work as follows:

In the first case, that of the simple non-condensing Corliss engine, the heads unjacketed, we see, taking the first example, that the use of the jacket reduced the cylinder wastes from about 25 per cent. of the ideal consumption of steam and feed water to about half that proportion, for ratios of expansion approximating 6; from one-third to about one-tenth, at a ratio of 5; and apparently from 20 to 10 per cent. at 4.4. The same general effect is observed throughout, with some discrepancies, which may be due either to varying action of the jacket or to slight errors of observation, or to both combined—the latter being the probable fact.

In this first case also the jacket gives best results with 110 pounds of steam when the ratio of expansion approximates 6. When the steam pressure falls to approximately 80 pounds the best work of the jacket occurs at a ratio not far from 4.75; while at the pressure of 50 pounds the value of the jacket increases through the whole range of the experiments, and not only so, but the curve assumes a rectilinear form indicative of probable improvement indefinitely in the direction of increasing expansion. The highest efficiencies, however, either with or without the jacket are found in this case at the lowest ratios adopted, and indicate a maximum value at about 3.25. The ratios of expansion for maximum efficiency of fluid in the other cases are for 110 pound about 5, and for 80 pounds about 3.5.

Similarly studying the performance of the condensing engine, we find that the best work done, whether jacketed or not, at about a ratio of expansion of 10 (at a steam pressure of 110 pounds), but that the jacketed engine reduces the internal wastes from 50 per cent. at highest ratios, and from one-fourth at the lowest ratios, in the case of the unjacketed engine, to 5 per cent., and in some cases probably to within the magnitude of the errors of observation. At a pressure of 90 pounds the best ratio seems to be for this engine, under the given conditions of operation, about 6.5 when unjacketed and 8.5 jacketed, while the lower pressures still further reduce both the efficiencies and the savings effected by the jacket. The best work of the jacket, as an economizer of heat, is done at high pressure, at a ratio of

expansion of 12 or more. In all cases it seems to be the fact, with these engines at least, that the jacket is useful beyond the ratios of maximum efficiency of fluid.

The compound engine is operated at altogether too low a pressure to bring out the best effect of compounding; but it exhibits the same general effects which have been noted in the cases of working of simple engines. The effect of the jacket is less pronounced than in the simple engine, and the efficiencies of fluid vary less with variation of the ratios of expansion. It gives its best result at ratios of expansion ranging from 7.5 to 10.5.

This discovery of a maximum efficiency of jacket may throw some light upon the causes of the conflicting and sometimes apparently irreconcilable results of trials of engines with and without jackets, and with jackets variously constructed. The discovery may also prove of value to the designer, as aiding him in securing the best proportions and arrangement of his engine.

Steel Tubes for Bicycles.

Before the United States General Appraisers at New York, April 9, 1891. In the matter of protest 46306 of Rochester Cycle Mfg. Company, against the decision of the collector of customs at Rochester, N. Y., as to the rate and amount of duties chargeable on certain tubes for bicycle wheels, imported per Celtic, February, 24, 1891, the following opinion was rendered by Tichenor, General Appraiser:

The merchandise consists of tubes of wrought steel in straight pieces, varying in length from 5 to 15 feet, and intended for use in the manufacture of bicycle wheels. Duty was assessed upon them at 45 per cent. ad valorem, under paragraph 215, act of October 1, 1890.

The appellants claim that the merchandise is dutiable at 2½ cents per pound, under paragraph 157 of said act. The collector, in his letter transmitting the papers in the case, expresses the opinion that the claim of the importer is well founded, but states that he assessed duty upon the goods at the rate applicable to manufactures of steel not specially provided for, in order to get a ruling upon the subject.

Paragraph 157 provides for "boiler and other tubes, pipes, flues or stags of wrought iron or steel." "We find from the papers before us that the tubes in question are of wrought steel and are specially provided for in said paragraph. Their intended use cannot, therefore, affect their classification for dutiable purposes. The appellants' claim is accordingly sustained."

A New Gas Machine.

Albany, N. Y., has a new enterprise in the shape of the Electric Gas Machine Company, situated at the corner of Green and Beaver streets. The company supply a gas plant for suburban houses or detached residences. The working of the machine is described briefly as follows: A rectangular acid-proof tank is divided by a partition extending from the top half way down to the bottom of the tank. A quantity of acid solution of the proper proportions is placed in the tank, thus filling it up to or slightly above the bottom of the partition; then a quantity of hydrocarbon liquid is placed in the gas compartment through a tiller.

The hydrocarbon liquid floats on top of the solution and does not mingle with it. On an oscillating arm or shelf (which, by a lever, is so operated as to easily bring it to the necessary position) is placed a quantity of iron scraps. The shelf is then placed in its normal position. The hydrogen produced bubbling up through the

hydrocarbon liquid is thereby carbonized and thence delivered through pipes to any point desired.

When the gas is not being used it immediately accumulates in the top of the gas compartment, thus forcing the hydrocarbon liquid down, which in turn forces the acid solution down and away from the scrap iron on the oscillating arm and the manufacture ceases.

The officers of the new company are Fred F. Wheeler, president; Louis W. Prath, vice-president; Gaylord Logan, secretary and treasurer; J. W. Tallmadge, manager.

Pennsylvania's Supremacy.

Different sections of the country come forward frequently as claimants for a high position in the iron trade. It is usual then to build high hopes on the decadence of the Pennsylvania iron trade, which is soon to follow the ascendancy of blossoming and youthful rivals. We have had the curiosity to examine more closely the status of Pennsylvania and present as the result the following table, which places side by side the total make of the country and that of Pennsylvania from Mr. Swank's last report:

Production of Iron in Pennsylvania.

	Total United States. Net tons.	Pennsylvania. Net tons.	Per cent.
Pig iron.....	10,307,028	4,945,169	47
Bessemer steel.....	4,131,535	2,523,424	61
Open-hearth steel.....	574,820	467,614	81
Crucible steel.....	79,716	60,490	77
Steel rails.....	2,013,188	1,396,400	69
Steel cut nails.....	191,740	59,532	30
Iron cut nails.....	90,307	51,759	57
Wire nails.....	156,795	53,083	33
Steel plates and sheets.....	401,537	288,131	71
Iron plates and sheets.....	505,642	376,614	74
Other rolled steel.....	1,829,247	1,001,582	55
All rolled iron.....	2,820,377	1,479,318	52

To us the most significant fact shown by this table is not the eminence of Pennsylvania in the manufacture of the cruder articles, but its high position in the production of finished goods.

Rail and Lake Rates from Pittsburgh.

At a meeting of the Pittsburgh Committee of Freight Agents of the various lines leading into that city, held there last week, the schedule of rail and lake rates for the coming season was agreed upon. The new rates went into effect on Monday, the 27th inst., and are as follows: In the sixth general classes the rates from Pittsburgh to Sault Ste. Marie are 46, 39, 34, 24, 20 and 17 cents per hundred pounds. To Marquette 62, 52, 45, 30, 24 and 21 cents. To Houghton, Hancock, Lake Linden and Dollar Bay 70, 57, 50, 36, 29 and 26 cents respectively for each of the six classes. To Bayfield, Ashland, Washburne, West Superior and Duluth 75, 62, 50, 36, 29 and 26 cents. To St. Ignace, Menominee and Green Bay 45, 37, 32, 23, 18 and 15 cents. To Escanaba 59, 49, 42, 28, 23 and 20 cents. The rates on articles of iron and steel manufacture in less than carload and carload lots, 24,000 pounds and over, to the points mentioned are much lower. In the first they range from 20 to 29 cents per 100 and in the latter from 17 to 23 cents. For rail fastenings in carload lots there will be a uniform rate of 18½ cents. These rates are liable to some slight changes the latter part of the season.

THE WEEK.

The recent feat of the United States revenue cutter Morrill shows that a vessel drawing 9 feet of water can go inland from Charleston to Fernandina. A canal costing \$50,000 would permit navigation for vessels drawing 11 feet.

The Government of Trinidad has contracted for direct steamship communication with New York.

On the subject of reciprocity the enthusiasm of President Harrison is undiminished. In one of his speeches delivered in the course of a tour through the South the President said to the people of Galveston: "Already one treaty with that youngest of the South American republics, the great Republic of Brazil, has been negotiated and proclaimed. I think, without disclosing an executive secret, I may tell you that the arrangement with Brazil is not likely to abide in lonesomeness much longer. [Great and prolonged cheering]. That others are to follow, and that as a result of these trade arrangements the products of the United States—our meats, our breadstuffs and certain lines of manufactured goods—are to find free or favored access to the ports of many of these South and Central American States. All the States will share in these benefits. We have had some analyses made of the manifests of some of our steamers now sailing to South American ports, and in a single steamer it was found that 25 of our States contributed to the cargo. But we shall need something more. We shall need American steamships to carry American goods to these ports."

Grand calculations are already made of the advantages to result from Secretary Blaine's successful negotiation of a reciprocity treaty with Spain. The United States, it is confidently predicted, will speedily begin to appropriate a large portion of the profits of Cuban trade which heretofore have been appropriated by others. Kansas, Nebraska, Minnesota and the Red River Valley will now produce the grain, and Minneapolis will now grind the flour, so it is said, for the entire Cuban market, and at one bound our export business will spring from \$13,000,000 to \$20,000,000. Altogether our Cuban exports, it is thought, may reach the round sum of \$50,000,000 in a single year. American sugar machinery has already done much for Cuba. The picture held out is flattering, truly.

A 15-story fireproof office building will be erected on Church street between Cortlandt and Dey streets for Theo. A. Havemeyer, of sugar renown. The lot, 200 x 60 feet, cost about \$450,000 and the structure, which will be a mixture of stone, brick, iron and terra cotta, may cost \$1,000,000. A new feature will be two express elevators running to the seventh story without interruption, in addition to four on the usual plan. The architect is Geo. B. Post. The city is being fast dotted over with these mammoth structures. Still another just planned is the New Netherland Hotel, to rise 17 stories above the sidewalk, on the corner of Fifth avenue and Fifty-ninth street. Estimated cost, \$2,000,000 to \$3,000,000. Opposite is Judge Dugro's new hotel, 12 stories above the street level, to cost about \$1,000,000. Further downtown, on Fifth avenue and Thirty-third street, the Hotel Waldorf, to perpetuate the memory of John Jacob Astor, is under way. Estimated cost \$1,500,000 to \$2,000,000.

Lumber trusts are forming in the Southern States on the Atlantic seaboard to control the pine product and stop the profitless cutting of prices. At Darien, Georgia, a

new lumber corporation has \$5,000,000 capital and has in control hundreds of thousands of acres.

Immigration into the United States in March comprised 52,172 persons, an increase of 14,422 compared with March, 1890. The totals for the first three months of the calendar year were 316,237 in 1891, against 254,403 in 1890.

Reciprocity with Canada may come when the people there understand that the Government at Washington is not ready to accept a one-sided arrangement which opens our markets to the products of Canada without opening hers to our manufacturers. The slender majority of 25 by which the Conservatives control the new Canadian Parliament is not enough to stand in the way of a strong popular current, so it is commonly believed.

The American Tobacco Company, organized a year ago, has bought two of the largest factories in Baltimore. The capital is \$25,000,000. Jas. B. Duke of New York, is president.

The interior of Florida is being opened to the coast by new lines of railroad. Work has been commenced at Tallahassee toward Gainesville, from whence the line will extend to deep water, making an outlet for heavy timber. Another line will go from Ocala, the central sugar region.

Will England and China form an alliance to check Russia in her advance, looking toward Afghanistan, with the ultimate object of conquering India? This subject is considered at length in an official and influential organ of the Japanese Government. The writer is inclined to the view that as a conquering power Russia's presence would be dreaded less than that of England, whose policy is more domineering. Moreover, the advancing troops of Russia would be Mahomedan, against whom the Sepoys would fight reluctantly. In case of war the interests of Japan and Russia would be more identical, the former being midway between the belligerents, and the tendency toward an alliance between these powers is said to be growing stronger.

The Dominion Government is being importuned to build a canal to connect Georgian Bay with Lake Ontario. An excavation 58 miles in length would shorten the distance between Duluth and Chicago over 300 miles. The estimated cost is \$5,000,000.

The Mexican Government has under consideration a plan for unifying the system of interstate taxation which has so long been a serious impediment to trade in that republic. The plan provides for a simplification of internal taxation, uniform imposition of duties, and a uniform State revenue stamp system on petty sales under the control of the Federal Government. It is prohibited that any State shall impose taxes discriminating against manufacturers in other States.

Removing the rocks in Niagara River at Strawberry Island under the Government contract proves to be a very difficult engineering job. Anchors weighing 2800 pounds, designed to hold the drill boat, were quickly swept from the reefs.

A Japanese paper, published in Tokio, gives some astonishing proofs of the recent increase of Japan's material prosperity. In 1864 Japan's exports and imports were valued respectively at \$15,550,000 and \$10,690,000. In 1889 the corresponding figures were \$70,060,000 and \$60,100,000. Between 1872 and 1887 foreign trade rose from \$1.30 to \$3.44 per capita. In 1889 the country had 2038 trading companies, with a total capital of \$67,855,468, and in 1890 1061 banks, with a total capital of \$92,446,063. All these companies and banks have come into existence in the last

20 years. Of the companies, 54 are active in mining, 22 in spinning, 108 in weaving, and 650 in silk manufacture. The amount of agricultural products was increased from 125,000,000 bushels in 1878 to 190,000,000 in 1888. In 1871 Japan had only 46 ships of European construction; now she has 1420. The number of pieces handled by the Japanese mail service swelled from 61,000,000 in 1869 to 150,000,000 in 1888. There are now 27,923 educational institutions, with 69,032 teachers, and 3,050,538 students, against 12,597 institutions, 27,000 teachers and 1,300,000 students in 1873.

As before intimated, a concerted movement is making in the West, in co-operation with merchants in New Orleans, to divert Central and South American trade from New York to the route via Mississippi River, and two accredited prospectors who are visiting Cuba, Mexico and other countries whose interest it is desired to awaken, report favorable progress. The Illinois Central Railroad Company, it is said, are prepared to build fast steamships, to ply between New Orleans and foreign ports, to establish direct trade. The traveling delegates may require six months more to complete their investigations and report. The Columbian Exposition, as we learn from the *Chicago Tribune*, is to be the lever which the Illinois Central and the capitalists of Chicago and New Orleans intend to use to effect their purposes.

The semi-annual convention of the Massachusetts State Assembly of the Knights of Labor, held in Boston, received a report from Master Workman Litchman, which contained several timely suggestions. He said: "I have never believed that simply because one man hired another there should be eternal warfare between the two. I know from experience that an employer is sometimes forced into a false position by circumstances. I wish the time would come when the true reciprocal relations between employer and employee could be more fully understood by each. Prosperity to the employer means more men employed. Good wages and constant employment for the worker means larger and longer returns on money invested."

The Columbia River and Puget Sound Navigation Company are building new steamers of a high order. Of 30 vessels recently loading at ports on Puget Sound all but five were American, showing that steamers are in demand.

European parties in this country are inquiring into the peculiarities of the Simpson timber dry dock system.

For the third time in the experience of St. Paul an electric street car was set on fire by lightning and irreparably damaged.

Coal shipments from Philadelphia to foreign ports are becoming more frequent, prompted by the exactions of miners in the United Kingdom. Italian steamers last week loaded 3500 tons for Palermo. It is stated that coal can be purchased in Pennsylvania and shipped to Italy cheaper and better than from Wales.

Five hundred stone masons in this city, all Italians belonging to the American Federation, endeavored to compel non-strikers to throw up their jobs. On 14 men who were arrested there were found seven revolvers, 16 stilettos and a variety of small knives.

Great success has attended the efforts of the Reading Railroad to establish a steamship line to London, stopping at Swansea. Beginning with chartered vessels sailing twice a month, it is now probable a weekly service will soon be necessary. The railroad line is said to have been very much strengthened in its connections. Of the outward-bound freight fully three-

quarters comes from the West, and of the inward-bound one-half is destined for interior points.

Encouraged by the new postal bill the project for a steamship line from Philadelphia to Monrovia, in the Liberian Republic, is revived. If a postal contract can be secured three steamers will be built. It is proposed to run via the Madeira Islands.

Lord Dufferin recently sent home from his post of diplomatic service in Italy a statement of the economic progress of that country during the last 25 years. It covers the entire ground indicated in that title, being a collection of authentic data concerning every subject in which national progress has been discerned. The population of Italy has grown in 30 years from 21,777,333 to 30,000,000 nearly. The produce of the six great crops—wheat, maize, other cereals, rice, oil and wine—increased from about 97,000,000 hl. (about 22 gallons) in 1860 to 134,000,000 hl. in 1890. The product of the mining industry increased from 42,000,000 francs in 1871 to 53,500,000 francs in 1889. The wages for factory and other work, except silk, has also undergone a general rise.

W. B. Lupton of Pittsburgh is inquiring into the operation of the New York Trade Schools. He claims that boys should be taught trades to prevent them becoming criminals, and that labor organizations fail to give them suitable opportunity.

Important discoveries of nickel ore are announced in South Dakota, Harney City district.

Strong opposition is made in the New York Legislature to Assemblyman Johnson's bill against erecting barb wire fences.

New York Socialists are active in the Pennsylvania coke regions. One indication is seen in the attempted destruction of the residence of H. C. Frick with dynamite.

The Master Car Builders' Association a few years ago adopted a standard type of automatic freight-car coupler, and at the present time the total number of cars equipped is about 123,000.

The city of Vancouver, British Columbia, now numbers 15,000 inhabitants, and the new line of steamers to Japan, of which the "Empress of India" is pioneer, is expected to impart a strong progressive influence. Vancouver last year handled 15,000,000 pounds of tea, out of 21,000,000 pounds imported from Japan into this country.

The Western Wholesale Sash, Door and Blind Association, which was formed some weeks ago, is said to be defunct, the interests involved being of too diversified a nature to be harmonized.

The New York wholesale lumber dealers have decided to organize a general boycott against the demands of the Lumber Handlers' and Truck Drivers' Association. They decided that no change whatever will be made at present in respect either to time or wages, and every yard stop furnishing lumber to any building job until the boycott is removed.

A bill giving cities authority to regulate the height of buildings is under consideration in the Massachusetts Legislature. A national convention of architects and others recently held in New York set the limit at 125 feet.

A significant fact indicating the decay of the Knights of Labor occurred at the New York State Convention of the Farmers' Alliance. Hicks and Maguire, accredited delegates to that body from the last State convention of Knights, the former chairman of the Legislative Committee,

were invited to speak. Mr. Hicks explained to the convention that he had spent the winter at Albany endeavoring to secure legislation in sympathy with the demands of labor. He had utterly failed; his demands had been ignored or ridiculed. Accordingly, he had come to carry out his instructions and to offer the complete co-operation of the Knights in any political plan which the alliance might adopt.

The foreign debt of Guatemala is reported by the last official returns to be \$4,613,500, while the internal debt is \$4,883,500.

The shipment of frozen carcasses of mutton from the Argentine Republic to England has increased very rapidly within the last six years. In 1885 the total number of frozen carcasses received at Liverpool and other British ports was 190,571; while in 1890 it was 1,320,944.

The mails going to South America of late are the largest ever known, and the increase of epistolary communication is assumed to be a true index of the state of trade. A single steamer last week took out 3½ tons of mail matter.

The foundations of George Vanderbilt's \$5,000,000 chateau at Asheville, N. C., have been commenced. It will be of brick and stone in the French style on an estate of 700,000 acres.

A brief exhibit of the business of Armour & Co., Chicago, for the year ending April 1, 1891, shows the following: Total distributivesales, \$66,000,000; hogs killed, 1,714,000; cattle killed, 712,000; sheep killed, 413,000; number of employees, 7900; aggregate wages paid, \$3,800,000; equipment of refrigerator cars, 2250. The ground area covered by buildings, 50 acres; floor area in buildings, 140 acres; chill room and cold storage area, 40 acres; storage capacity, 130,000 tons. The Armour Glue Works, owned by Armour & Co., manufactured during the year 7,000,000 pounds of glue and 9500 tons of fertilizer, &c.—employing 600 hands.

The Reading Railroad extension to Arthur Kill is to be pushed through at once from Bound Brook and is expected to have an important influence on the coal trade.

The following is the minority report offered by California at the Commercial Congress in Kansas City, Mo.: "We object to the free coinage of silver on the ground that the taxpayers of the United States are now buying all of the silver output at about 97 cents per ounce, whereas it is claimed that the free coinage will raise the price against the taxpayers to \$1.29 per ounce. We see no use of taxpayers advancing the price of the article against themselves for the benefit of the few that own the silver."

The enormous wealth of France is shown by official documents. As nearly as can be gathered the public fortune is as follows: Property not built on, 157,000,000,000 francs; land built on, 17,000,000,000; mainmort property, 5,000,000,000; mineral waters, 120,000,000; merchant navy, 500,000,000; fisheries, 45,000,000; industrial property, 14,000,000,000; specie in circulation, 6,000,000,000; articles in gold and silver, 500,000,000; household goods, 24,000,000,000; State domain, 10,000,000,000. This gives a total of 234,165,000,000 francs as the approximate value of the fortune of this republic—that is to say, \$46,833,000,000.

Colorado still ranks as the first silver-producing State, followed by Montana not so closely as in 1889, and Utah with over \$10,000,000 is still third in rank. Nevada, fourth in rank, is decreasing in silver production, while Idaho, fifth in

rank in both years, is increasing, and now less than a million behind.

The number of inhabitants of British India by the late census is 230,490,000, an increase of nearly 22,000,000 since 1881. The population of all India amounts to about 285,000,000.

The population of the Russian empire January 1, 1889, was 112,342,758.

The eight hour strike in this city May 1 is not likely to cause much disturbance outside of the building trades and the housemiths' vocation. The Tin and Sheet-Iron Workers' and Steam-Fitters' Unions have decided to wait until August 1 to ask for eight hours. In other parts of the country the outlook is much less threatening than a year ago, especially should the bituminous coal miners reconsider their purpose and attempt an adjustment of the labor question in some other way.

American cotton manufacturers have as yet derived no benefit from the 25 per cent. tariff reduction under the new Brazilian treaty. It will probably require a practical demonstration whether the discrimination in favor of American cottons will enable American manufacturers to compete with any chance of success with British manufacturers with their banking facilities, credits, and willingness to adapt their goods to the market. The total value of British exports of cotton manufactures to Brazil for the last calendar year was in round numbers \$12,500,000, while the exports of cotton goods from the United States show the comparatively insignificant total of \$782,000.

The Government of Japan, upon the advice of the Minister of Marine, has resolved to more than double her present naval force. Three cruisers and a torpedo boat will be commenced at once. The total number of ships to be built, in addition to the four mentioned, is 22, including five iron clads, seven cruisers and ten torpedo boats. The total tonnage of the new vessels amounts to 62,250 and the total cost to 46,797,514 yen. With this addition to her naval armament Japan will rank among the most formidable countries of the world.

Australasian Foreign Trade.—The following figures as to the foreign trade of the principal Australasian colonies during the year 1890 are given in the Sydney *Morning Herald*:

	Imports.		Exports.	
	1890.	1889.	1890.	1889.
	£	£	£	£
Victoria....	22,952,376	24,402,760	13,227,673	12,734,734
New South Wales....	21,370,039	22,546,233	21,625,342	23,268,570
South Australia....	8,302,673	6,804,451	8,827,378	7,250,265
New Zealand ..	6,300,577	6,297,097	9,824,109	9,239,265
Totals ..	58,885,665	60,050,541	53,504,522	52,501,934

The journal points out that in the four colonies there was a decrease in the imports of £1,164,876 and an increase in the exports of £1,192,598. The trade on the whole, it says, indicates that the colonies have been living more largely on their own resources. As compared with the previous year, 1890 shows a decrease in imports of £1,450,384 for Victoria, a decrease of £1,176,194 for New South Wales, an increase of £1,458,222 for South Australia, and an increase of £3480 for New Zealand. Victoria shows for the year an increase in exports to the extent of £492,939, New South Wales a decrease of £1,343,228, South Australia an increase of £568,013 and New Zealand an increase of £484,844.

The Iron Age

New York, Thursday, April 30, 1891.

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CHAS KIRCHHOFF, - - - EDITOR.
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RICHARD R. WILLIAMS - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

A Time for Watching Markets.

It is much more important for buyers to correctly forecast an upward movement in prices than a downward course. If an upward movement catches them unawares and supplied with but small stocks, their chances for reaping much benefit from the improvement in trade are decidedly lessened. There is an element of speculation in all kinds of business, but it seems to belong particularly to the iron trade, which is subject to such rapid changes from activity to dullness and *vice versa*. Circumstances are now so shaping themselves that buyers need to be on the alert for everything that may influence the demand or the course of prices. In spite of the severe depression at present existing, and which must have a very discouraging effect, the condition of the country appears to be ripening for an enormous demand for iron and steel. The deeper the depression now goes, and the more the demand shrinks, the greater will be the urgency for material of all kinds after the tide has turned. This has been the history of all previous depressions in the iron trade.

The depression through which we are now just passing has been unprecedented in several important respects. Within four months our rate of pig-iron production has fallen from the highest ever reached by any country to the level of that of 1887. And yet this remarkable shrinkage has hardly more than corresponded with the decline in consumption. The demand for finished iron and steel has fallen off heavily, and both merchants and consumers hesitate to lay in stocks in the absence of a market and with the possibility of a continued decline in prices. The shrinkage in business is well illustrated by the experience of a Western manufacturer of machinery, whose orders booked in December reached \$75,000, in January \$25,000, in February \$10,000, in March \$5000, and in April still less. The position of the railroads in consuming iron and steel is illustrated by the policy now being enforced by one of the leading Western lines, which has always stood in the front rank of progressive and well managed companies. They have almost entirely closed their repair shops and for some time has had in force a standing order to car inspectors to side-track every car needing repairs. In ordinary times this line buys hundreds of tons of bar iron monthly, but it now buys two or three bars at a time. Thousands of cars have been side-tracked to wait repairs not only on this road, but on almost every other road. It has been

years since such a condition of affairs prevailed. Repairing has usually proceeded to a moderate extent even if traffic was light.

With the bright crop prospects now in view the railroads must before long begin to make preparations for increased business. In fact, the Missouri Pacific has already ordered every locomotive and freight car to be put in proper condition for use as rapidly as the work can be done. Once this spirit of active preparation for business takes hold of any number of railroad managers they will not enter the market gradually and place orders for the material cautiously, soliciting bids from every mill within their reach. The probabilities are that they will order with a rush and all will demand immediate shipment so that repairs will not be delayed. A movement of this kind quickens other branches of trade involving the consumption of iron and steel. It is therefore quite in the line of probabilities that the transition from dullness to activity may be very sudden and carry prices up with a rush because furnaces and mills will not be able to start up fast enough to keep pace with the demand. This is the view taken by quite conservative business men who are now keenly watching for the first signs of an improvement in prices, when they will proceed to stock up in advance of their future requirements. Meanwhile there are contingencies to be taken into consideration, such as the danger of a heavy frost, &c., which prevent the general laying in of stocks at this time, while prices are low and sellers are solicitous for trade.

The Progress of Steel.

The admirable statistical work which James M. Swank, General Manager of the American Iron and Steel Association, has put forth in his last annual report gives numerical expression to many facts, the general tenor of which the trade is familiar with. Mr. Swank has, from year to year, extended his work, with a quick appreciation of the points of interest to the iron trade. It must have added enormously to his labors and has rendered his report more emphatically a document needing the closest study. It is particularly interesting to follow the rapid increase in the use of steel for many articles for which iron was exclusively employed a decade since. The change, of course, involves many modifications in the conditions which affect subsidiary industries. How enormously the production of steel has grown is shown in the following table:

The Production of Steel.

Years.	Total.	
	Net tons.	Gross tons.
1885.....	1,917,350	1,711,920
1886.....	2,870,003	2,502,503
1887.....	3,739,760	3,339,071
1888.....	3,247,373	2,899,440
1889.....	3,792,020	3,385,732
1890.....	4,790,319	4,277,071

The principal increase has, of course, taken place in Bessemer steel, although open-hearth metal, too, has a great progress to record:

Years.	Bessemer steel. Net tons.	Open-hearth steel. Net tons.
1885.....	1,701,702	149,381
1886.....	2,541,493	245,250
1887.....	3,288,357	360,717
1888.....	2,812,500	352,086
1889.....	3,281,829	419,488
1890.....	4,131,535	574,820

Crucible and miscellaneous steel plays a relatively unimportant part. It is probable, too, that the higher grades of Bessemer and open-hearth steels are seriously cutting into this class of metal:

Years.	Crucible steel. Net tons.	Miscellaneous steel. Net tons.
1885.....	64,511	1,696
1886.....	80,609	2,651
1887.....	84,421	6,265
1888.....	78,713	4,124
1889.....	84,969	5,734
1890.....	79,716	4,248

One by one important lines of manufacture have succumbed to the advance of steel. The manufacture of iron rails practically ceased in 1883. The situation in the nail trade is particularly interesting. In 1884 only 5 per cent. of the total make of cut nails was made of steel. While it was gaining rapidly, the wire nail began to force its way into the markets and now the record stands for 1890, 1,806,130 kegs of iron cut nails, 3,834,816 kegs of steel cut nails, and 31,35,911 kegs of steel wire nails. In 1886, when the total output of nails was nearly the same, iron cut nails stood first with 5,191,984 kegs, steel cut nails second with 2,968,989 kegs and wire nails with about 600,000 kegs. So far as the raw material is concerned the growth of the wire nail manufacture is simply a matter of placing the steel at the disposal of the maker in a different form. It is worthy of note, however, that the facilities for the production of wire rods have been very greatly expanded in this country, and that the importation of wire rods, which was as great as 153,401 net tons in 1886, has been cut down to 62,078 net tons in 1890, the greater part of which is probably Swedish rivet and other special stock. Meanwhile the production of wire rods at home has risen from 313,341 tons in 1889 to 511,951 tons in 1890. It is worthy of note that the aggregate of imports and production in 1889 and 1890, which was 490,122 and 574,029 tons respectively, shows a growth of consumption of about 84,000 tons. The increase in wire nails was equivalent to about 35,000 tons, so that apparently the other branches of the wire trade, in the aggregate, increased in volume considerably in 1890 over 1889.

The only other line of manufacture in which the progress of steel is directly traceable is that of plates and sheets. The following table which we quote from

Mr. Swank gives not alone the data relating to this branch, but deals also with the others:

misleading. In few sections of the country are so many workmen living in their own homes as in Illinois. They

engines were introduced, and, singular as it may seem, they were belted directly on to the same shaft. Natural gas of the quality used in Detroit, it is claimed, is of at least 25 per cent. greater explosive force under the conditions in which it is used in a gas engine than ordinary artificial gas.

The Production of Rolled Iron and Steel.

Articles.—Net tons.	1888.		1889.		1890.	
	Iron.	Steel.	Iron.	Steel.	Iron.	Steel.
Rails.....	14,352	1,557,892	10,258	1,694,610	15,548	2,095,906
Cut nails.....	108,505	216,174	88,904	201,634	90,307	191,740
Plates and sheets.....	469,312	213,694	471,193	331,283	505,642	401,537
Wire rods.....	14,571	298,770	14,460	393,053	19,798	492,153
Other rolled products.....	1,805,014	473,247	2,001,570	658,394	2,189,082	743,817
Total.....	2,411,654	2,759,777	2,586,385	3,278,974	2,820,377	3,925,243

This table, also, is highly instructive, so far as the production of rolled iron is concerned. In spite of the tremendous increase which is placed to the credit of steel, iron has gained steadily, so that the former metal has really taken care only of the natural growth in the demand. The puddling furnace evidently is not extinct yet, nor are the days of re-rolling old iron rails and scrap over. Still it is unquestionably true that the source of supply of old material, in the shape of iron rails, is being drawn on heavily and that it is only a question of a decade when the industries based upon it must turn to something else.

The growing preponderance of steel brings up for serious consideration the question of our supplies for the Bessemer process. In 1890 the production of Bessemer pig iron was 4,583,424 net tons, for which the raw material must be drawn from comparatively limited areas. Last year the difference in price between non-Bessemer and Bessemer ores widened. Should it display a growing tendency in that direction, then we may expect a more marked adoption of the basic Bessemer process.

Savings Banks and Western Workingmen.

The surprising statement is made, in discussing a mutual savings bank law in Illinois, that the average savings deposits of the people of that State are but \$3.69 per capita. This is not a creditable showing for a State so richly endowed by nature and which occupies so high a position in the industrial world. If it were viewed as a naked fact it would indicate that the people of Illinois are either recklessly improvident or that their incomes are barely sufficient to provide the necessities of life. Comparisons with other States are not favorable to the people of Illinois. New York savings banks show an average of \$108 per capita for the entire state; Connecticut, \$156; Massachusetts, \$156; New Hampshire, \$191. It is claimed that these States specially encourage the accumulation of savings by the working classes through their mutual savings banks laws, and hence a measure of that character is advocated for Illinois. But the working people of Illinois are not improvident or poorly paid, and the figures given are

are encouraged to buy property through building associations and land syndicates selling lots and erecting houses on easy payments. The activity in real estate transactions in the vicinity of Chicago is very largely due to the purchases made by working people. Their number has increased so rapidly of late years, with the multiplication of factories, that vast sums of money are passing into investments of this character which would in older communities go into savings banks. Another decade will bring about great changes in this respect, and savings banks will then become a more important feature in the Western workingman's domestic economy.

Natural Gas as a Motive Power.

When an addition is made to the works occupied by a manufacturing company, a wing to the main building, for example, the question of getting power into the new department becomes of surpassing importance. Particularly is this the case if there is no immediate occasion for carrying a line shaft through that portion of the building lying between the engine and the new department. Conditions similar to these recently arose in the works of the Michigan Stove Company, Detroit, Mich., on the completion of an addition to their main building, some account of which has already been presented in these columns. The lower floors of the new building are devoted to the wood and iron pattern shops and to the nickeling department. The power necessary to drive the machinery used in these several departments was estimated at no less than 100 horse-power. Several plans were suggested for obtaining this power, one of which was to use wire-rope transmission and another was to carry a steam pipe from the boiler and locate a special engine in the basement of the building. Still another was to put in a gas motor, using for the purpose natural gas, a supply of which is now piped to Detroit from the Northern Ohio gas districts. The latter plan was decided upon. It was in a sense, however, an experiment both for the company and for the parties supplying the gas engine. Instead of using a single motor, which would have been employed had it been available at the time, two 50 horse-power gas

The great Chicago scheme for the construction of a ship canal from Lake Michigan to the Mississippi River is making discouragingly slow progress. This is rather singular, in view of the fact that all the powers needed to carry out the undertaking have been granted by the State to a board of trustees duly elected by the citizens of Chicago. It was expected that the work would be vigorously pushed soon after the board was organized, as a great deal of preliminary engineering investigation had been done before the State was called upon to legislate in the matter, and it was presumed that the people of Chicago knew just what they wanted. But the board of trustees have evidently been frightened by the estimates of cost of the ship canal upon the lines laid down in the act of authorization, and are inclined to limit the work to a channel sufficient to dispose of the sewage of Chicago. The drainage of the city was the impelling motive to the scheme of the ship canal, but the residents of the interior of the State have always strenuously objected to the diversion in their direction of Chicago sewage unless sufficiently diluted by a large volume of water from Lake Michigan to render it inoffensive. Their consent to the drainage scheme having been obtained on the promise that a ship canal should be constructed, it is evident that trouble will be encountered by the trustees if the plans are so radically changed. The necessity for providing good drainage to Chicago is so great that the question of cost will ultimately be faced courageously and the ship canal pushed through to completion, as the sentiment of the people of Chicago is strongly in favor of it.

J. W. Graydon, formerly of the navy, has recently written from London to President Harrison directing the latter's attention to his new gas-producing agent for throwing large masses of high explosives in aerial torpedo form. He offers to convert all of the smooth-bore cannon now mounted in United States forts into dynamite projectors by applying the gas reservoirs thereto in a month's time at a trifling expense. The composition of the new propelling agent, he says, is a secret, only the results being demonstrated.

There is in operation at the works of Hawksley, Wild & Co., Sheffield, a powerful hydraulic flanging press, with four separate cylinders, capable of dealing with plates up to 11 feet diameter. A set of six plates, which were 10 feet 3 inches before flanging, have been flanged to 9 feet 3 inches diameter with an 8½-inch flange. These plates are from ¼-inch to ¾-inch thick, forming the largest and thickest diameter plates which have ever been flanged at one heat up to the present time.

Cost of Steel Rails.

Ten Years' Achievement in Reducing Cost.

The *Iron Age* has been placed in the position of being able to lay before the trade a series of highly instructive figures—the first time that data of this character have been placed before the public. These figures give the cost, from month to month, from 1881 to 1890, both inclusive, of the coal, pig iron and steel rails produced by a leading mill, which ranks among the prosperous concerns of the country. The company produce their own coal. They make the greater part of the pig iron which they consume, and it is the cost of that part which is made at their plant that is recorded in our tables. The cost of this pig iron cannot, of course, be taken as the basis of computations affecting the cost of the rails, because there entered into the mixture some other iron, purchased in the open market at probably, in the majority of cases, considerably higher prices. The costs throughout are those arrived at in the monthly mill sheets, and therefore represent the mill cost.

1881.			
Months.	Coal.	Pig iron.	Rails
January.....	\$1.23	\$24.34	\$41.34
February.....	1.37	26.31	44.35
March.....	1.37	25.51	40.27
April.....	1.25	27.99	45.27
May.....	1.42	25.88	43.35
June.....	1.51	26.25	42.02
July.....	1.39	25.40	46.34
August.....	1.52	27.27	45.71
September.....	1.75	25.62	49.17
October.....	1.51	27.60	45.62
November.....	1.42	26.23	43.59
December.....	1.48	24.06	41.63

1882.			
Months.	Coal.	Pig iron.	Rails
January.....	\$1.42	\$22.20	\$42.05
February.....	1.32	21.72	43.36
March.....	1.38	22.41	43.03
April.....	1.35	22.97	44.32
May.....	1.44	22.80	44.55
June.....	1.54	24.07	41.76
July.....	1.58	25.11	46.72
August.....	1.55	23.24	45.35
September.....	1.52	24.88	44.91
October.....	1.59	22.85	43.89
November.....	1.45	21.40	41.07
December.....	1.43	21.06	45.82

1883.			
Months.	Coal.	Pig iron.	Rails
January.....	\$1.33	\$27.40	\$42.32
February.....	1.34	19.65	40.22
March.....	1.37	18.80	39.90
April.....	1.30	19.28	39.94
May.....	1.31	18.67	34.93
June.....	1.32	18.37	35.86
July.....	1.28	17.49	33.53
August.....	1.35	18.01	33.51
September.....	1.36	17.59	31.99
October.....	1.18	17.70	32.27
November.....	1.11	17.88	30.80
December.....	1.17	16.84	30.75

1884.			
Months.	Coal.	Pig Iron.	Rails
January.....	\$1.14	\$16.89	\$31.86
February.....	1.00	16.62	30.10
March.....	1.09	16.77	29.62
April.....	1.03	16.70	28.77
May.....	.99	16.53	28.02
June.....	1.01	16.77	28.79
July.....	1.10	16.93	29.74
August.....	1.04	15.71	29.31
September.....	1.10	16.80	28.78
October.....	1.09	15.84	28.20
November.....	1.13	15.46	27.70
December.....	1.01	15.50	27.00

1885.			
Months.	Coal.	Pig iron.	Rails
January.....	\$1.05	\$15.92	\$27.37
February.....	1.03	16.08	28.93
March.....	1.16	15.27	26.98
April.....	.98	14.69	27.02
May.....	1.12	15.41	28.03
June.....	1.00	15.68	28.13
July.....	1.06	15.48	26.80
August.....	1.07	16.45	26.52
September.....	1.03	15.69	27.45
October.....	1.12	15.79	26.81
November.....	1.16	15.95	26.70
December.....	1.16	16.50	26.11

1886.			
Months.	Coal.	Pig iron.	Rails
January.....	\$1.19	\$16.36	\$27.32
February.....	1.07	16.19	26.16
March.....	1.09	17.74	28.65
April.....	1.26	17.92	29.29
May.....	1.06	17.89	29.30
June.....	1.10	17.13	29.07
July.....	1.09	18.01	29.71
August.....	1.14	17.77	29.82
September.....	1.19	17.80	29.19
October.....	1.16	17.74	28.84
November.....	1.08	18.11	30.59
December.....	.99	18.59	30.67

1887.			
Months.	Coal.	Pig iron.	Rails
January.....	\$1.20	\$18.90	\$31.23
February.....	1.07	18.37	29.93
March.....	1.07	18.30	29.93
April.....	1.06	17.65	30.12
May.....	1.05	16.89	29.57
June.....	1.05	17.50	29.69
July.....	1.16	18.67	30.93
August.....	1.14	17.92	31.45
September.....	1.15	18.78	29.04
October.....	1.16	19.31	30.60
November.....	1.13	18.11	30.05
December.....	1.11	18.07	30.83

1888.			
Months.	Coal.	Pig iron.	Rails
January.....	\$1.24	\$17.34	\$35.45
February.....	1.10	18.63	30.59
March.....	1.17	17.43	28.74
April.....	1.20	18.47	28.16
May.....	1.12	17.88	29.58
June.....	1.08	17.44	29.85
July.....	1.04	17.43	28.01
August.....	1.10	16.81	26.62
September.....	1.12	16.57	27.14
October.....	1.08	17.60	27.49
November.....	1.12	16.83	26.19
December.....	1.06	16.34	27.41

1889.			
Months.	Coal.	Pig Iron.	Rails
January.....	\$1.09	\$15.59	\$26.96
February.....	1.07	16.23	26.52
March.....	1.13	14.97	25.95
April.....	1.17	14.74	26.56
May.....	1.23	14.16	24.87
June.....	1.08	14.63	24.94
July.....	1.11	15.25	26.57
August.....	1.06	14.89	25.77
September.....	1.11	14.76	25.52
October.....	1.25	15.80	26.41
November.....	1.22	16.45	26.22
December.....	1.09	15.67	26.49

1890.			
Months.	Coal.	Pig Iron.	Rails
January.....	\$1.05	\$15.92	\$27.83
February.....	1.12	15.14	28.38
March.....	1.12	15.37	27.99
April.....	1.15	15.62	28.56
May.....	1.05	16.18	27.87
June.....	1.10	15.37	30.63
July.....	1.12	15.63	29.44
August.....	1.14	16.40	28.37
September.....	1.34	16.77	29.09
October.....	1.28	16.44	29.25
November.....	1.20	15.53	29.41
December.....	1.23	15.68	31.01

The principal factor in the reduction of cost has been, of course, the cheapening of the raw material—pig iron—through lower ores, lessened fuel consumption, and largely increased output.

During 1890 the Rio Tinto Company of Spain made a gross profit of £1,045,093, and a net profit of £694,006, or about \$3,360,000, out of which a dividend of 16½ per cent. was paid, leaving a balance of £157,776. The company shipped 19,997

tons of copper and 397,875 tons of pyrites containing 9592 tons of copper.

J. P. Edwards, who succeeded George Carter as general manager of the Sligo Rolling Mills of Phillips, Nimick & Co., has resigned his position.

OBITUARY.

JOSEPH M. BOIES.

Mr. Joseph M. Boies, who died in Chicago on the 22d inst., was born in Blandford, Mass., April 20, 1809. In the year 1834 he was married to Miss Electa Laffin, the youngest sister of Matthew Laffin of Chicago. For many years Mr. Boies was actively and successfully engaged in manufacturing and commercial enterprises in the East and West. With his relatives—the Laffins and the late Solomon A. Smith of Chicago—he organized the powder business, which was conducted by the firm of Laffin, Smith & Boies, and was one of the original members and largest stockholders of the Laffin and Rand Powder Company. His firm furnished the powder used in the construction of the Illinois and Michigan Canal. At one period of his life he was engaged in large enterprises in the South, having his headquarters at New Orleans. During the war time he was an ardent patriot, and materially and morally supported and assisted the government. At the outbreak of the rebellion he hastened to assure Mr. Lincoln and the authorities at Washington that the product of the powder mills of his business was subject to their demand, without reference to the certainty or uncertainty of compensation.

EDWARD L. DEMING.

Edward L. Deming, for 25 years a representative of the Stanley Works, Stanley Rule and Level Company and Humason & Beckley Mfg. Company, in many markets, died from pneumonia, complicated with heart disease, on the 21st inst. His age was 45 years, and the burial was at Newark, Ohio. The service of Mr. Deming as a traveling salesman covered almost a generation, and his loss is sincerely mourned by a large circle of friends and business associates.

EMMET M'CLURE.

Emmet McClure, for 30 years cashier for Jones & Laughlins, Limited, proprietors of the American Iron and Steel Works, at Pittsburgh, Pa., died at his home in Allegheny, Pa., on Saturday, the 25th inst. Several weeks ago Mr. McClure was stricken with the grip, which developed into erysipelas, causing his death. He had an enviable reputation among business men for integrity and honesty.

PHILIP L. MOEN.

Philip L. Moen, president of the Washburn & Moen Mfg. Company, Worcester, Mass., died at his home in Worcester on April 23. He was born at Wilna, N. Y., November 13, 1824. He was held in high esteem for his personal worth, and was prominently identified with the development of the manufacturing interests of the country, being at the time of his death at the head of one of the largest wire manufacturing establishments in the world. In a subsequent issue we shall refer in more detail to his business career.

Information has been received of the recent death in Australia of A. M. Cook, for a number of years connected with McLean Bros. & Rigg. Mr. Cook was for several years with the house in this city and was thus known to many of the city trade, by whom he was held in high esteem.

HARDEN L. BECK, formerly manager of the Bellaire Nail Works of Bellaire, Ohio,

died at his home at Butler, Pa., on the 18th inst., aged 50 years. Mr. Beck was a stockholder of the Bellaire Nail Works and very recently attended a meeting of the board of directors of that firm. His death was caused by the grip.

WILLARD GAY, president of the National State Bank, Troy, N. Y., and one of the organizers and treasurer of the Walter A. Wood Mowing Machine Company, Hoosick Falls, N. Y., died at his home in Troy last week.

MANUFACTURING.

Iron and Steel.

The nail factory of the Riverside Iron Works of Wheeling, W. Va., have started up after an idleness of several weeks. The steel plant has also resumed operations after a stoppage of several days. The two blast furnaces of this firm, which are now idle, will resume operations as soon as a supply of coke can be secured.

The Etna Iron Works, Limited, at New Castle, Pa., will soon commence to make a number of important improvements in their rolling mill. The old nail plate train will be torn out and a new train built by the Lloyd-Booth Company of Youngstown, Ohio, will be erected. Three new puddling furnaces will also be added to the present capacity. At their blast furnaces a new Witherow blowing engine is being erected by James P. Witherow of Pittsburgh.

The blooming mills of the Cleveland Rolling Mill Company, at Cleveland, Ohio, shut down on the 14th inst., owing to the scarcity of coke. It is expected that other portions of the mills will be closed, as there is very little coke in that city.

The Toledo Bridge Company of Toledo, Ohio, have been incorporated with a capital stock of \$100,000, to manufacture and construct bridges and structural iron and steel works. The incorporators are, James A. Huston, G. P. Waddorf, L. E. Clark, E. F. Smith and E. W. Toleston.

On Thursday, the 23d inst., a charter was granted to the Cold Rolled Steel Company of Pittsburgh, with a capital stock of \$50,000, with the privilege of increasing the same. The incorporators are W. H. Nimick, H. A. Jack, James W. Tyson, Jr., W. J. Howard, Jr., and Samuel B. Shoemaker. A plant is being erected on the corner of Sixteenth street and A. V. R. in that city. The new concern will turn out sheets, plates, rounds, half-ovals, half-rounds and all other shapes in which cold-rolled metal can be utilized. The material will be furnished by the drop press and draw bench work.

Girard Furnace of the Girard Iron Company at Girard, Ohio, is again in blast, turning out about 200 tons per day. This furnace is owned by A. M. Byers of Pittsburgh, and managed by Henry B. Shields.

The Falcon Iron and Nail Company of Niles, Ohio, are putting up a new building, 150 x 175 feet, in which they propose to manufacture galvanized sheet iron.

The plant of the Reliance Steel Casting Company at Pittsburgh, manufacturers of steel castings of all kinds, is being operated to its full capacity. The firm have sufficient orders on hand to keep them running for some time to come. A machine shop department was added to this plant some time ago, and it is now in full operation.

The firm of Alex. Laughlin & Co., engineers and contractors, of Pittsburgh, who have heretofore been occupying temporary offices in the Lewis Block, in that city, have located permanently in room No. 514 in that building.

The Mary Pratt Furnace Plant, at Birmingham, Ala., will be sold by Receiver Z. L. Nabers on June 2.

The new Philadelphia furnace, occupying the site of the old W. B. Wood furnace at Florence, Ala., has been formally accepted by the Florence Cotton and Iron Company.

The Spang Steel and Iron Company, at Etna, Pa., have just completed the specifications for a new department to be devoted to all kinds of heavy Government work. The new structure will occupy about 2 acres of ground, and work on the foundations for six open-hearth Bessemer melting furnaces and three heating furnaces will soon commence. The

cost is estimated at \$250,000, and when completed the entire works will occupy over 12 acres of ground.

In order to meet the heavy demands made upon them for black sheet iron, the Apollo Iron and Steel Company, whose works are at Apollo, Pa., are erecting a new building, equipped with the most modern machinery for the manufacture of this product, which may also be made to include a tinning plant for making tinned andterne plates.

The Kittanning, Pa., Rolling Mill closed down on the 17th inst. Lack of orders for their product is said to be the cause.

The Etna Iron and Steel Company of Bridgeport, Ohio, are making a specialty of angles, tees and shapes of all kinds, rolled from a special soft welding steel, which they guarantee will admit of a bar being bent down cold upon itself without fracture. The mill extension is progressing rapidly. It will contain two additional trains of sheet rolls and a 22-inch three-high bar mill, the special product of which for the present will be heavy bars and billets.

Open-hearth Furnace A of the Apollo Iron and Steel Company, Apollo, Pa., designed by Emile Rotzler, made its one-thousandth heat without any repairs to its roof, on April 15, the product having been 19,500 tons.

An annual meeting of the stockholders of the North Carolina Steel and Iron Company was held recently at Greenboro, N. C. The directors were authorized to levy an assessment of 15 per cent. on the stock subscribed. The following were elected directors for the coming year: S. H. Wiley of Salisbury, J. A. Odell, T. Worth, S. S. Brown, D. W. C. Benbow and R. T. Gray of Raleigh.

An annual meeting of the stockholders of the Buena Vista Iron Company was held at Buena Vista, Va., on the 21st of the month. The following Board of Directors was elected for the ensuing year: C. M. Clark, E. C. Pechin, F. H. Chauvenet, A. T. Barclay, F. J. Kimball, B. C. Moomaw and George W. Baker. Mr. Chauvenet was elected president, C. M. Clark, vice-president, and Mr. Baker, secretary and treasurer.

The capacity of the Bluefield Iron Works, at Bluefield, W. Va., it is reported, is to be increased. These works are owned and operated by W. A. Cather and Bro.

Work will begin at an early date on the construction of an iron furnace at Front Royal, Va., by the Twin City Iron Company.

It is reported that at the next meeting of the Tennessee Coal, Iron and Railway Company, in New York, T. T. Hillman of Birmingham intends submitting to the directors a proposition relative to the construction of a steel plant at Ensley, Ala. The proposition embodies the utilization of the \$50,000 of stock which the company own in the Ensley City Land Company toward the construction of the steel plant, Mr. Hillman and his associates agreeing to furnish \$500,000 more for the purpose.

The Gem Furnace, belonging to the Shenandoah Furnace Company, Shenandoah, Va., has been relined, and will be put into blast at an early date.

It is stated that steel plants and blast furnaces will soon be constructed by the Rogers Syndicate Land Company of Cumberland, Tenn., who are developing the new town of Arthur.

The Oremont Iron and Coal Company have been organized at Potts Creek, Va., with a capital stock of \$100,000, for the purpose of developing coal and iron mines, building new town, &c., at the mouth of Potts Creek. The company are reported to have purchased the Payne farm of 1246 acres for the sum of \$52,000, and will lay it off in town lots. They are said to have purchased 1384 acres of New River coking coal and 4000 acres of iron land.

The mineral lands of Mt. Athos, Va., have been purchased by Lynchburg and Richmond capitalists, who are preparing to erect iron furnaces. Information will be furnished by J. B. Robertson.

The Swift's Iron and Steel Works, at Newport, Ky., are reported to have been purchased by the Globe Iron Roofing and Corrugating Company of Cincinnati, Ohio, who are prepared to operate the same.

The rod mill of the Kilmer Mfg. Company, at Newburgh, N. Y., of which we made mention in *The Iron Age* of March 26, is running to their entire satisfaction, and they have found, on account of the increasing demand for their rods, that it is necessary for them to add another heating furnace. The contract for this has already been placed, to be completed the latter part of next month, so that they will be in position by June 1 of this year to produce 175 tons of finished rods per day.

Phillips, Nimick & Co., proprietors of the Sligo Rolling Mills at Pittsburgh, have recently placed in their 16-inch bar mill a Smith heating furnace with a hearth 7 x 18 feet in size and two double-breasted gas producers.

No. 8 furnace of the Thomas Iron Company at Lock Ridge, Pa., is almost ready for operation again, the repairs being about completed. It will probably go in blast early next month. Six furnaces of this firm located at Hokenauqua, Pa., are now in blast.

The 20-inch mill of A. & P. Roberts & Co., Pencoyd, Pa., has been started with a full crew of men.

James P. Witherow, engineer and contractor, of Pittsburgh has closed a contract with the Oliver Iron and Steel Company of that city for the complete remodeling of Edith Furnace in Allegheny, Pa., which they have recently purchased. The furnace will be entirely rebuilt and three Cowper-Kennedy hot-blast stoves, 18 x 70 feet in size, will be added, and a new hoisting tower will be erected. The new automatic blowing engine put on the market some time ago by Mr. Witherow has been thoroughly tested at the plant of the Florence Cotton and Iron Company at Florence, Ala., with satisfactory results. Mr. Witherow built the entire plant of this concern, consisting of one blast furnace 17 x 80 feet in size, equipped with three Whitwell hot-blast stoves 20 x 70 feet in size, 16 two-flue boilers 54 inches in diameter and 34 feet long, and three of the latest improved Witherow automatic cut-off blowing engines. This blast furnace plant is one of the most complete in the South and is now in operation, doing good work. In addition to the above Mr. Witherow has the contract for the blast furnace plant of the Carnegie Iron Company at Johnson City, Tenn. It consists of one blast furnace 17 x 75 feet in size equipped with three Whitwell hot-blast stoves 18 x 60 feet in size. Work on this plant will be completed about May 15 next, at which date it is expected to go in blast. For the Bristol Iron and Steel Company at Bristol, Tenn., Mr. Witherow has also a complete blast furnace plant in process of erection. It consists of one stack 17 x 75 feet in size, equipped with three Whitwell hot blast stoves, 16 boilers and three Witherow automatic cut-off blowing engines. For the Watts Iron and Steel Syndicate at Middlesborough, Ky., Mr. Witherow has under construction two blast furnaces 17 x 75 feet in size equipped with seven Whitwell hot blast stoves 30 x 60 feet in size, 24 boilers and six Witherow cut-off blowing engines.

The bar mill of the Delaware Rolling Mill at Phillipsburg, N. J., has started up.

The strike at the New Haven Rolling Mill, New Haven, Conn., is ended, the men having accepted the company's terms.

Machinery.

The Industrial Iron Works at Bay City, Mich., are preparing to build an addition 255 x 90 feet to their works.

An important feature of the new foundry of the Atherton Machine Company, now nearing completion at Lowell, Mass., will be the complete system of overhead cranes for handling material.

The American Car and Equipment Company, with headquarters at 10 Wall street, New York, are making preparations to wind up their affairs and will probably make application for a receiver in a few days. The company were organized several years ago for the purpose of dealing in old locomotives and cars and their principal business of late has been the purchase of the barred-out jigger surface cars in New York. The assets of the company are said to be very small, while the liabilities are as yet unknown. Business with the company had been very slow for some time.

The New Haven, Conn., Steamboat Company have in contemplation the building of a new iron propeller, as a companion to the Northam, which plies between New Haven and New York. The new boat will be of iron, embodying all the modern improvements as to elegance and speed, and will cost about \$300,000.

Shultz Belting Company, St. Louis, Mo., report an excellent trade, so far as they are concerned. Among the recent orders received by them was one from the St. Louis and Suburban Railway Company for two belts, each 72 inches wide and 154 feet long. In addition to the above they have sold to the concern ten generator belts, aggregating 700 feet of belting 16 inches wide.

Chas. P. Willard & Co. of Chicago, announce that the necessities of their rapidly increasing business have rendered the separation of their office and working forces inconvenient, and that they have, therefore, fitted up new

offices at their works, Nos. 1 to 9 Dominick street. They have discontinued their present salesroom and office at 236 Randolph street. In their new location the firm will have plenty of room for storing and showing their goods, and they will continue to carry on hand a complete stock of portable, stationary and marine steam engines and boilers. They are also builders of steam launches, yachts and tugboats.

The Armstrong Mfg. Company, Bridgeport, Conn., have brought out a new machine for cutting off and threading pipe. The well-known adjustable dies made by this company are used in this machine. The machine will cut off and thread pipe $2\frac{1}{2}$ to 4 inches inclusive. It is self-feeding for cutting off. The gears and bearings are inclosed in an oil chamber, insuring lubrication and protecting the working parts from dirt and chips.

E. H. Bramhall of Bath, Maine, is building a foundry, machine shop and woodworking shop, to be used in connection with his business of building steam yachts.

The Whittier Machine Company of Boston are to have a new shop erected, to be 116 x 75 feet.

A new shop, 115 x 116 feet, two stories, is to be erected by the Whittier Machine Company, Whitinsville, Mass.

Sewall & Simpson have bought the Palmer Foundry at Kenduskeag, Maine, and will make stoves, agricultural implements, &c.

A movement is on foot at Nashua, N. H., to establish a co-operative edge-tool factory by certain employees of the American Edge-Tool Company, who are to remove to Douglas, Mass. It is proposed to raise a capital of \$25,000.

The Case Engine Company of New Britain, Conn., are building an addition 35 x 50 feet to their shops, which will soon be equipped and ready for occupancy.

Pratt & Cady of Hartford, Conn., have erected a new brick foundry 75 x 240 feet, with monitor roof, and having a capacity of over 40 tons per day. It is wholly of iron, and a pattern room, casting room and storage sheds have also been built, of nearly equal size.

The Thomson-Houston Motor Company of Lynn, Mass., who have been successful in developing new uses for the electric motor, have recently perfected an application of their motor to the Gould triplex pumps. Both motor and pump are mounted on the same base, thus making a very compact piece of apparatus. These machines are furnished for any desired capacity, from 15 to 500 gallons per minute, and for pressures of from 50 to 150 pounds per square inch.

It is reported that the Ross-Meehan Brake Shoe Foundry Company, at Chattanooga, Tenn., have undertaken the manufacture of ice machinery at their works, under the Stratton patents.

Additional machinery, including boiler rolls to bend 8 feet thick, traveling crane to lift 20 tons, and a hydraulic wheel press, has been added to the plant of the Brunswick Foundry, Machine and Mfg. Company, at Brunswick, Ga.

Buildings have been erected and machine works started at the Demorest Machine Works, at Demorest, Ga.

The Valley Engine and Machine Works, located in West Lynchburg, Va., make nine different sizes of automatic engines for various purposes, ranging from 6 to 258 horse-power.

An electric-light plant is to be put in the foundry and machine shops of the Ragsdale Mfg. Company, at Greenwood, Miss.

At Orange, Texas, a company will establish, it is reported, an iron foundry and machine shops. Chas. McFarland is interested.

It is reported that a machine shop is to be erected at Columbus, Ga., by C. F. Pekor.

It is stated by J. M. Robinson of Baltimore, Md., president of the Seaboard Air Line System, that a consolidation is to take place between the shops of the Carolina Central Railroad and those of the Raleigh and Gaston Railroad Company, for which purpose it is contemplated to move the latter from Raleigh, Va., to some point further South.

A machine shop has been erected at Tampa, Fla., by J. H. Wells.

The stock company incorporated by J. T. Kelly, T. N. Campbell, J. L. Godfrey and others, for the purpose of enlarging and operating the iron foundry of Kelly-Brothers, at Jonesboro, N. C., will henceforth be known as the Jonesboro Iron Works Company.

The annual meeting of the stockholders of the Westinghouse Electric and Mfg. Company of Pittsburgh will be held in the Westing-

house Building in that city on Monday next, May 4. The meeting is for the purpose of holding an election for a board of directors and for the transaction of such other business as may properly come before the meeting.

William Tod & Co., founders and machinists, at Youngstown, Ohio, have been compelled to fit up new and more commodious quarters for their drawing department. Their new drawing rooms will have a fire-proof vault to protect their valuable drawings, of which they have a large number. The shops of this firm are being operated night and day to their utmost capacity. Last week they shipped a large rail-straightening press to the Colorado Coal and Iron Company at Pueblo, Col.

The machinery establishment of Davis & Cresswell, at Denver, Col., the largest of its kind in the West, has been totally destroyed by fire. The loss on building and contents is \$125,000.

Aug. Wolf & Co. of Chambersburg, Pa., have just completed and moved into a new machine shop.

The Whittier Machine Company of Boston are preparing to erect a new shop which will be 166 x 75 feet.

Hardware.

The Horne & Danz Company, manufacturers of tinware, St. Paul, Minn., occupy two large buildings covering some 85,000 feet of floor space and employ about 200 hands. The business of the company in 1890 was 25 per cent. greater than that of 1889, and they have been compelled to increase their plant by the erection of a three-story warehouse which will put them in better position to take care of their trade.

It is reported that a factory is to be erected at Frederick, Md., by Walling, Tyson & Zimmerman, for the purpose of manufacturing the Zimmer window-shutter fastener.

The Anthony Wayne Mfg. Company, Fort Wayne, Ind., write under date of 23d inst. that they are having an unprecedented demand for their "Anthony Wayne" and "Western Star" Washers, and have orders booked to keep them busy until the middle of July. They are pushing their productive capacity to its utmost to supply the trade.

Denver, Col., has subscribed to \$65,000 worth of stock in the Toronto Barbed Wire Company, with a view to inducing the company to locate there.

Romulus J. Hoffman, Charles E. Jones and William J. Flanagan of Florence, Ala., will soon enter upon the manufacture of a new line of locks at that point. The construction of the locks is referred to as an entirely new departure, and the principle will be applied to all kinds. The new company will be known under the style of the Detector Lock Company, the gentlemen above named comprising it. The paragraph in our issue, April 16, relating to the goods of this company as put on the market by the F. H. Foster Mfg. Co. of Florence was erroneous, that concern having nothing to do with their manufacture.

Miscellaneous.

The New York Board of Fire Underwriters, the Southeastern Tariff Association of Atlanta, Ga., and the Fire Underwriters' Association of Philadelphia, Pa., have, after examination by their experts and inspectors, approved of the Ongley Electric Register and Safety Signal System, and will accept of it as a satisfactory watch clock in mills or such other places as the rules of their associations call for such protection.

Articles of incorporation have been applied for by the Montreal, P. Q., Metal Company, capitalized at \$50,000.

The Baldwin Locomotive Works, Philadelphia, have shipped 27 locomotives to the Government of New South Wales, Sydney.

Among recently authorized corporations in Illinois are the following: The Steinhilber Combination Car Company, Chicago, to manufacture and sell stock, freight and coal chute cars; capital stock, \$500,000; incorporators, William Fuller, M. B. Mills and G. A. Fuller. H. Phillips Wrench and Plier Company, Chicago, to manufacture wrenches, pliers and other specialties; capital stock, \$50,000; incorporators, H. Phillips, F. H. Koehaet and J. F. Shaptand. Metal Furniture Supply Company of Chicago; location, Chicago; to manufacture and sell metal furniture of all kinds; capital stock, \$500,000; incorporators, Isaac T. Dyer, Artemus Herrington and Edgar H. McClannahan. Butman Furnace Company; location, Chicago; to manufacture and deal in steam furnaces and boilers; capital stock, \$50,000; incorporators, Thomas R. Butman, Edward C. Quimby and George Barry. The Russell Fuel Burner Company of Chicago, for the manu-

facture and sale of appliances for burning crude oils and other combustibles; capital stock, \$200,000; incorporators, Charles S. Raddin, William D. O'Brien and Samuel W. Adams. Blodgett Balance Power Engine Company; location, Chicago; to manufacture and sell engines for any and all purposes; capital stock, \$5,000,000; incorporators, John W. Blodgett, Wm. H. Blodgett and Daniel W. Proctor.

The Magnolia Anti-Friction Metal Company of New York have received in the last few days from London copy of a diploma for gold medal, awarded to them by the International Electrical Exhibition, held at Edinburgh, Scotland, in the latter part of 1890, for a special anti-friction metal for bearings of dynamos and other high-speed machinery.

The sad iron works of the East Birmingham Sad Iron and Mfg. Company of Birmingham, Ala., have been purchased by G. C. Kelly, who will in all probability operate the same.

There is a fair prospect of branch works being established at Barton, Fla., for the manufacture of phosphate mining supplies and machinery, as investigations to this end are being made by the Cameron & Berkeley Company of Charleston, S. C.

Tin Plate Manufacturers Confer.

At a meeting of the mills interested in tin plate manufacture in the United States, held in New York on Wednesday afternoon, a preliminary organization was formed under the name of the Tinned Plate Manufacturers' Association, with A. W. Britton chairman and C. R. Britton secretary, the object being to promote the manufacture of tin plate in the United States. There were present and represented by letter the following concerns: Somers Bros., Butler Rolling Mill, United States Iron and Tin Plate Company, Laufman & Co., Norton Bros., St. Louis Stamping Company, Falcon Iron and Nail Company, Marshall Bros. The mills built and building, it is estimated, have an annual capacity of 60,000 net tons. A committee was appointed to prepare for the final organization at a meeting to be held at Pittsburgh on May 8.

In one of the Pittsburgh papers recently appeared an item stating that C. H. Rowe, general manager of the Braddock Wire Company of that city, was to be removed from his position and a new manager, more popular with the strikers, would be put in his place, and that this new manager would endeavor to induce the strikers to resume their old places. We are informed that there is no truth whatever in this report. There are no places in the plant of the Braddock Wire Company to be filled, as their entire plant is being operated to its utmost capacity by non-union men. What gave rise to this report is the fact that the Braddock Wire Company have purchased a controlling interest in the Iowa Barb Wire Company at Allentown, Pa., and at a meeting of the board of directors of the latter-named concern, held some weeks since, C. H. Rowe was selected to take part in the management of that company. It was agreed, however, that he should remain with the Braddock Wire Company until he should defeat the strike which has been pending at their works for some time. This has been accomplished, and Mr. Rowe will soon leave Braddock to take charge of his new position at Allentown, Pa. The Braddock Wire Company authorize the statement that no consultation will be asked for or allowed with the strikers, as their mills at St. Louis, Pittsburgh and Allentown are run as non-union mills and will continue to be operated in that manner.

TRADE REPORT.

Chicago.

(By Telegraph.)

Office of The Iron Age, 59 Dearborn street, CHICAGO, April 29, 1891.

In some respects the Iron market shows a glimmering of improvement. The volume of business is certainly larger than it has been and prices seem to have touched bottom. The threatened coal miners' strike appears to have been averted, and a most serious disturbance of Western industries is thus prevented. The weather has latterly been all that could be desired, and outdoor work is now being actively pushed. The hopeful feeling based on good prospects is daily growing more pronounced and the advent of prosperous times is regarded as near at hand.

Pig Iron.—Transactions have been quite numerous and important, including several contracts for round lots of Lake Superior Charcoal. In this the bottom seems to have been touched, as sellers are no longer ready to make the extremely low prices named last week. Some heavy orders have been placed for Coke Iron, both local and Southern; local Coke is held at about 25¢ on all grades. Makers of the latter are not pressing sales, but the supply seems to be ample to cover present requirements, except perhaps No. 2 Soft, which is quite scarce. The Coke strike is now beginning to pinch, and the local Pig-Iron makers are asking their customers to permit shipments to be postponed, because they have not sufficient stock on hand to make prompt shipments. Consumers are beginning to feel a little apprehensive, as orders for their finished products are now increasing. Ohio Softeners are even more scarce than local Irons, and inquiries are daily growing more frequent. Coke Bessemer is now very hard to get in this market. We quote for cash, f.o.b. Chicago:

Lake Superior Charcoal.....	\$17.00 @ \$18.00
Local Coke Foundry, No. 1.....	16.00 @ 16.50
Local Coke Foundry, No. 2.....	15.50 @ 15.75
Local Coke Foundry, No. 3.....	14.75 @ 15.00
Local Scotch.....	16.00 @ 16.50
Ohio Strong Softeners.....	18.50 @ 19.00
Southern Coke, No. 1.....	16.25 @ 16.75
Southern Coke, No. 2.....	15.75 @ 16.00
Southern Coke, No. 3.....	15.25 @ 15.50
Southern, No. 1, Soft.....	15.50 @ 15.75
Southern, No. 2, Soft.....	14.50 @ 14.75
Southern Gray Forge.....	14.25 @ 14.50
Tennessee Charcoal, No. 1.....	18.00 @
Alabama Car Wheel.....	22.50 @ 23.50
Coke Bessemer.....	17.00 @
Hocking Valley, No. 1.....	18.25 @ 18.50

Bar Iron.—The inquiry is much better than last week. Some agents report more sales than for a month previous. Orders are largely for general specifications, but some car orders are also coming up. While prices are close to where they have been, brokers report much difficulty in finding mills ready or willing to take orders at the rates freely quoted two weeks since. It is stated that the valley mills have agreed to maintain prices at 1.55¢ at mill as rock bottom. Local mills quote 1.60¢ @ 1.65¢, half extras, and are not inclined to book heavily at the lower rate with the improving prospects. Store prices are unchanged at 1.80¢ for small lots and 1.75¢ for carloads.

Structural Iron.—Heavy Beam contracts are now opening, some of which will have to be placed soon. A continuous stream of small orders is keeping local dealers very busy. They quote mill shipments: Angles, 2.25¢ @ 2.30¢, and Tees, 2.60¢ @ 2.70¢, with 1/4¢ extra for small lots from stock. Beams and Channels are unchanged at 3.20¢ for large lots.

Plates.—Large specifications are in the market from dealers, who are asking prices for proposed stock. General trade is quite

dull, but the outlook is encouraging. Prices unchanged, as follows: Nos. 10 to 14 Iron Sheets, 2.65¢ @ 2.70¢; Steel Sheets, 2.80¢ @ 2.90¢; Tank Iron, 2.50¢ @ 2.60¢; Tank Steel, 2.60¢ @ 2.70¢; Boiler Tubes, 55 % off up to 2 1/2 inches and 60 % off on greater.

Sheets.—A better inquiry is reported for Black Sheets, both Iron and Steel, but buyers are slow to come to terms, desiring more favorable deliveries than makers are willing to name. Mills quote 2.75¢ @ 2.80¢, at mill, for No. 27 Common Iron for reasonably prompt delivery, while jobbers are selling same from stock at 3.20¢.

Galvanized Iron.—Is irregular; some agents are reporting a better feeling, and others find trade still dull and prices weak. Jobbers quote Juniata 65 % off, with slight concessions to best buyers.

Merchant Steel.—Consumers are urging more rapid deliveries of material under contract, but new orders are being withheld. We quote prices as before: Tool Steel at 6 1/2¢ @ 8¢ and upward, according to brand; Open-Hearth Machinery at 2.30¢ @ 2.65¢, Spring at 2.50¢ @ 2.75¢, Tire at 2.30¢ @ 2.60¢, and Bessemer Bars at 2.20¢ @ 2.30¢.

Track Supplies.—The Steel Rail market is still without animation. The orders now being booked are of an unimportant character, but the demand for light Rails is especially good. Inquiries for standard sections are increasing, and negotiations are pending for round lots, but they are slow to develop into actual business. It is understood that the question of price is not so much an element in these transactions as financial arrangements. Makers quote \$31 their bottom rate, with the usual advance on small lots. A sale of 5000 tons Foreign Steel Rails is reported here at \$41 delivered San Francisco in May. Very low prices are rumored to have been made on Splice Bars for delivery in other localities, but for Chicago delivery makers continue to quote Iron at 1.85¢ @ 1.90¢. Spikes are selling in small lots at 2¢ @ 2.10¢, but large orders could be placed considerably lower. Track Bolts with Hexagon Nuts are quoted 2.80¢ @ 2.90¢, but the demand is light.

Old Rails and Wheels.—Old Iron Rails are exceedingly quiet. Small transactions are reported at \$22.75, Chicago, and \$22.50 delivered at buyers' works. In Old Steel Rails some business is being done at \$13.50 for short pieces and \$15 @ \$16 for long lengths. Car Wheels appear to be wholly neglected, and are nominally quoted \$16.50 @ \$17.

Scrap.—Business has again fallen off, but prices are quite firm, as dealers seem to have full control of the supply. We quote as follows: No. 1 Railroad, \$19; No. 1 Forge, \$18.50; No. 1 Mill, \$13.50; Fish Plates, \$21 @ \$21.50; Axles, \$24; Pipes and Flues, \$12.50 @ \$13; Horsehoes, \$18.50; Cast Borings, \$7.50 @ \$8; Wrought Turnings, \$11.50; Axle Turnings, \$13; Machinery Cast, \$12; Stove Plates, \$8.50 @ \$9; Mixed Steel, \$11; Coil Steel, \$15; Leaf, \$16; Tires, \$18.

Metals.—Copper is weaker, with falling off in the demand, and can now be had at 1/4¢ lb less than last week for both Lake and casting brands. Spelter is unchanged. In Pig Lead an unexpected improvement is noted by dealers. By the middle of the week consumers again entered the market, most of the cheap Lead was quickly absorbed, and prices advanced to 4¢ bid under sales of 500 tons. The closing is firm but quiet at 4¢ bid, 4.10¢ asked, and the quantity of Lead pressing for sale is not large.

The firm of Parkes & York, 700 and 701 Phenix Building, Chicago, was dissolved

by mutual consent on the 25th inst. Either of the partners will sign in liquidation—John C. Parkes and James E. York.

Philadelphia.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, Pa., April 28, 1891.

Pig Iron.—There are no specially new features to-day, although there is an undertone of confidence which promises well for the future. Good Foundry Irons are beginning to be a little scarce, and it is not unlikely that makers will be asking more money before long. They are already working up to \$18 for any good brand, and \$17.75 is an inside figure for anything that can be considered a standard article. Alabama Irons are selling in a small way at about \$1 less, but there is not much disposition to push business by either side. Mill Irons are in fair supply, and prices show very little change, although the decrease in stocks ought to be felt by this time. But for the present consumers appear to get all the Iron they require at \$14.50 @ \$15, delivered, for good Mill Irons, so that they show no urgency to increase their lines even at the low prices named. The position might easily become very sensitive, however, as a little extra demand would soon be felt, and if prices once get started, they may go higher than there is any need for, although as a matter of fact no one expects much of a change until toward fall. Current quotations for lots delivered in consumers' yards are about as follows, varying according to brand and distance from furnace, viz:

Ohio Softeners, No. 1x.....	\$19.00 @ \$19.50
Ohio Softeners, No. 2x.....	18.00 @ 18.50
Standard Penna, No. 1x.....	17.50 @ 18.00
Standard Penna, No. 2x.....	16.50 @ 17.00
Medium Penna, No. 1x.....	17.25 @ 17.50
Medium Penna, No. 2x.....	16.00 @ 16.25
Virginia, No. 1x.....	16.75 @ 17.50
Virginia, No. 2x.....	15.75 @ 16.00
Standard Neutral All-Ore Forge	14.75 @ 15.25
Ordinary Forge Cinder-mixed ..	14.00 @ 14.25

Bessemer Pig.—There is more inquiry, and prospects indicate a revival of business in this department at an early date, but as yet prices are purely nominal at about \$17.50 at furnace for standard qualities, and for special brands \$20 to \$20.50.

Ferromanganese.—There is a much better feeling in this department, and buyers are prepared to pay higher prices for summer shipments, but holders quote with extreme caution, at say \$66 @ \$67 for summer shipments, although for some deliveries it is thought that firm offers at \$65.50 would probably meet with acceptance.

Steel Billets.—In sympathy with Steel material, Billets and Slabs are held at higher prices. At date of our last report orders might have been placed at \$27 @ \$27.50, but a full half dollar would have to be added to these figures to-day, and even then the order would be carefully scrutinized as to specification and time and place of delivery. Buyers show no great anxiety, however, for the present, although it is not unlikely that the market is on the point of a steady reaction toward better figures. P. S.—Since writing the above we hear of several important transactions commencing at \$27, delivered, for Nail Slabs in the vicinity of Harrisburg, and \$27.75 at tide for 4 x 4 Billets. To-day several sales are reported at a further advance of 50¢ per ton, with indications that makers have got all the business they want at these figures.

Steel Rails.—The market is steady, but not very active as regards new business. Mills are well supplied with work for the next couple of months, however, and in the meantime it is felt that a great deal of business must be given out, so that full employment is regarded as certain for the summer months, with a possibility of a

scramble for deliveries before the snow flies. Meanwhile \$30 at mills is a firm quotation.

Muck Bars.—A fair amount of business has been done during the week at prices equal to \$25.75 @ \$26.25 at sellers' mills. There are buyers to-day at \$26.50, delivered, but those who have Bars for sale are not able to meet that quotation on account of freights. Business could be done at \$26.75 @ \$27, but buyers are hardly prepared to go beyond \$26.50 at present. P. S.—Sales reported this p.m. at \$27 for one lot; holders inclined to quote that figure firm on all new business.

Bar Iron.—Prices in this department are still weak and unsettled. Manufacturers profess to ask 1.75¢ @ 1.80¢, but orders have been placed at less than 1.70¢ for what the seller claims to be first-class Bars. There is no doubt that mills are very short of work, and until they can get something ahead it is useless to expect better prices. Car orders ought to be coming in soon, and if they should come, as they often do, at this time of the year, it would be a great help to the Bar trade. Meanwhile 1.60¢ @ 1.65¢ is quoted at mills in the interior and 1.75¢ @ 1.80¢ are supposed to be city prices, but all depends on what the order is, quotations being subject to liberal concessions on specially desirable business.

Skelp Iron.—The market is very dull, and prices remain at the low figures quoted for sometime past—namely, 1.70¢ @ 1.75¢, delivered—although even these could be shaded on a 500-ton order for desirable sizes.

Plates.—There is a better demand for Plates, but the market is still far from being what could be desired at this season of the year. The leading mills manage to run moderately full, although there are some that still find it hard work to keep up to more than single turn. The absence of large orders is severely felt, the shipyards, besides other large consumers, being comparatively dull, with no immediate prospect of bettering their condition. Prices for lots delivered in consumers' yards are nominally as follows, but on large orders liberal concessions can be had in the majority of cases.

	Iron.	Steel.
Tank Plates.....	2.00 @ 2.10¢	2.05 @ 2.30¢
Refined.....	2.30 @ 2.30¢	2.05 @ 2.10¢
Shell.....	2.30 @ 2.40¢	2.40 @ 2.50¢
Flange.....	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box.....	4.00 @ 4.25¢	3.00 @ 3.50¢

Structural Material.—The demand is about the same as reported for some weeks past, although prospects are beginning to improve. Mills moderately employed; some quite full of orders, others ready for almost anything that comes along. Prices unchanged as follows for lots delivered in consumers' yards: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 2.05¢ @ 2.15¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—Business is a trifle better, but prices are still very irregular, and some makes have been offered at very low prices. The demand promises to be very large, however, so that the leading makers are somewhat conservative in quoting on deferred deliveries. Nominal prices are about as follows:

Best Refined, Nos. 14 to 20.....	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....	3.10¢ @
Best Refined, Nos. 25 to 26.....	3.20¢ @ 3.30¢
Best Refined, No. 27.....	3.40¢ @
Best Refined, No. 28.....	3.50¢ @
Common, $\frac{1}{2}$ ¢ less than the above.	
Best Soft Steel, Nos. 14 to 20.....	3¢ @ 3 $\frac{1}{4}$ ¢
Best Soft Steel, Nos. 21 to 24.....	3 $\frac{1}{4}$ ¢ @
Best Soft Steel, Nos. 25 to 26.....	4¢ @
Best Soft Steel, Nos. 27 to 28.....	4¢ @

Best Bloom Sheets, $\frac{1}{2}$ ¢ extra over the above prices.

Best Bloom, Galvanized, discount..... @ 65 %
Common, discount..... @ 67 $\frac{1}{2}$ %

Old Rails.—Nothing doing in Iron Rails, so that quotations are nominal at \$22.50 @ \$23 asked for seaboard lots, or \$23 @ \$23.50 delivered at points near by. Old Steel from \$17 to \$18, according to point of delivery.

Scrap Iron.—The demand is fair, and as the supply is not large prices are maintained at about the figures recently quoted, say: No. 1 Railroad Scrap, \$22 @ \$23, Philadelphia, or for deliveries at mills in the interior, \$22 @ \$23, according to distance and quality; \$15 @ \$16 for No. 2 Light; \$14 @ \$15 for best Machinery Scrap; \$13 @ \$14 for ordinary; \$15 @ \$16 for Wrought Turnings; \$10 @ \$10.50 for Cast Borings, and nominally \$25 @ \$26 for Old Fish Plates, and \$17 @ \$18, delivered, for Old Car Wheels.

Wrought-Iron Pipe.—The demand is improving, but as the output is in excess of consumption, the position is not such as indicates a healthy condition of things. A meeting of the manufacturers is to be held in a few days, when it is thought further changes will be made, but for the present discounts are:

Butt-Welded Black.....	57 $\frac{1}{2}$ %
Butt-Welded Galvanized.....	50 %
Lap-Welded Black.....	67 $\frac{1}{2}$ %
Lap-Welded Galvanized.....	55 %
Boiler Tubes, 2 $\frac{1}{2}$ inch and under.....	55 %
Boiler Tubes, 2 $\frac{1}{2}$ inch and larger.....	60 %

The numerous friends of E. Coit (and they comprise about everybody in the Pipe trade and its kindred industries) will be pleased to hear that he assumes the position of manager in St. Louis for the National Tube Works. Mr. Coit leaves for the West on Friday, and carries with him the best wishes of the trade in this vicinity, in which may be specially included the firm of W. R. Hart & Co., with whom he has been associated during the past two years.

The Slatington Rolling Mill Company of Slatington, Pa., have been reorganized as follows: David Williams, president; Wm. P. Hopkins, general manager; H. F. Hall, treasurer; S. De Long, secretary. Mr. Williams is a well-known capitalist in the Lehigh Valley, heavily interested in the slate industry of that region. Mr. Hopkins, the general manager, is well known in the iron trade, having been 27 years with the Catasauqua Mfg. Company; Mr. Hall nearly as many years with S. Robbins & Son of Philadelphia, and Mr. De Long in the mercantile business in Slatington. The company make a specialty of high-grade Iron, Stay Bolts, Rivet Iron, &c., and have built up quite a nice line of business, considering the short time since they commenced operations.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., }
CINCINNATI, April 29, 1891.

Pig Iron.—Each successive week is mainly a counterpart of the one preceding. An increased degree of weakness crops out in some place or on some varieties of Pig Iron, as long as the consumption is below the actual production. This week the depression seems to be greatest in Charcoal Iron of the lower grades, which have sold in some instances quite as low as Coke Iron both for spot and forward delivery. But no large sales were made, because of the lack of demand, although there appears to be some disposition to take advantage of the low rates now current. Southern Mill Irons continue to be weak, and while \$9.75 at the furnace was

exceptional a week ago, this is now the general price, which is equivalent to \$12.50 here, and there have been some sales for forward delivery, but not to any large extent. Foundry grades are better sustained in price, but the transactions in them are of moderate proportions, and even in them concessions are obtainable for spot cash. There would doubtless be more free buying if melters of Iron could see their way clear for even a fair consumption, for the time to buy is when every one wants to sell, and such is the case now. There are rumors of sales at lower prices than have been mentioned, but they lack confirmation, and the amount of romancing which is going on is a tribute to a capacity in that line that is phenomenal. It is certain that stocks in consumers' hands are much reduced, so that when a better demand for the finished product springs up large blocks of the raw material will be wanted. The following is a near approximation to the foundry current prices:

Foundry.

Southern Coke, No. 1.....	\$15.00 @ \$15.25
Southern Coke, No. 2.....	13.75 @ 14.00
Southern Coke, No. 3.....	13.50 @ 13.75
Ohio Soft Stone Coal, No. 1.....	16.50 @ 17.00
Ohio Soft Stone Coal, No. 2.....	15.50 @ 16.50
Mahoning and Shenango Valley.....	17.50 @ 18.00
Hanging Rock Charcoal, No. 1.....	20.00 @ 22.00
Hanging Rock Charcoal, No. 2.....	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1.....	17.01 @ 17.50
Tennessee and Alabama Charcoal, No. 2.....	16.50 @ 17.00

Forge.

Gray Forge.....	12.75 @ 13.00
Mottled Neutral Coke.....	12.50 @ 12.75

Car Wheel and Malleable Irons.

Southern Car Wheel.....	18.50 @ 20.50
Hanging Rock, Cold Blast.....	20.00 @ 22.00
Lake Superior Car Wheel and Malleable.....	19.50 @ 20.50

St. Louis.

Office of *The Iron Age*, 214 N. Sixth st., }
St. Louis, April 27, 1891.

Pig Iron.—A slight improvement is noticeable in the demand. Consumers who have been holding off are asking for prices and indications point to a more active market during May than the month just closing. Consumers, while they are not anxious regarding the immediate future, are more disposed to talk business than they have been for some time past, and while the demand is not likely to be of large dimensions for at least a few months, a marked improvement is likely to be felt in the next 30 days. The future course of the market depends to a great extent on the size and condition of the crops. It is questionable if furnace men would sell any large quantity of Iron for future delivery, unless at an advance over the prices quoted below. Consumers, however, are not willing to buy in large quantities for future delivery, preferring to purchase their supplies only as needed. The outlook is considered more favorable to-day than at any time since the first of the year, with the stocks on the furnace banks lower than at any time for years; and with a business outlook, from a consumer's point of view, of an encouraging character, it seems quite probable that the turn toward higher prices and an improved trade is nearly due. Sales during the week have been made at slight concessions from the prices quoted herewith. The following prices indicate the status of the market, and are quoted for cash, f.o.b. St. Louis.

Southern Coke, No. 1 Foundry.....	\$15.50 @ \$15.75
Southern Coke, No. 2 Foundry.....	14.50 @ 14.75
Southern Coke, No. 3 Foundry.....	13.75 @ 14.00
Gray Forge.....	13.25 @ 13.50
Southern Charcoal, No. 1 Foundry.....	17.50 @ 18.00
Southern Charcoal, No. 2 Foundry.....	17.00 @ 17.50
Missouri Charcoal, No. 1 Foundry.....	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry.....	15.00 @ 15.50
Ohio Softeners.....	18.00 @ 19.00

Bar Iron.—The demand continues to improve somewhat and prices have steadied themselves to some extent. Car orders are scarce, and it is from this source that mills are looking for an early increase in their trade. Lots from mill command 1.65¢ @ 1.67½¢, delivered on cars at East St. Louis. Jobbers quote 1.80¢ @ 1.85¢, according to quantity.

Barb Wire.—A week of considerable activity is reported in this department. Jobbers have been large purchasers, and indications point to a continued increase in the demand from this time on. Prices are firmly adhered to, as follows: Painted, 2.95¢; Galvanized, 3.50¢; carload lots 10¢ per cwt. less than above prices.

Wire Nails.—No improvement is noted in this department since our last report. Orders are scarce and mills are accumulating large stocks. Prices continue weak at from \$2.15 to \$2.20 from mill. At the meeting held in Cleveland on 24th inst. no definite arrangements were reached, as some of the mills refused to sign conditions agreed on at that meeting.

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date April 27, 1891, say: Our local market has been in a state of grave uncertainty during the past week, owing to the street-car strike having been assisted by the operators of nearly all of our foundries in this city. To-day the large car manufactories have a strike upon their hands, and it is uncertain indeed when these matters may be arrested and satisfactorily settled. It is thought that not until some time after May 1 will it be possible to adjust our labor matters here, and accordingly there will be little business in the iron line. There is some inquiry for Lake Superior Charcoal from various parts of the country, and in some considerable amounts, which will probably result in the placing during the next ten days or two weeks of a considerable tonnage, and we hope to relieve the pressure of large stocks now in the hands of furnacemen. While some of the quotations which we give below are nominal, the market may be said to be about as follows:

Lake Superior Charcoal, all numbers.....	\$18.50 @ \$19.00
Lake Superior Coke, Bessemer.....	18.00 @ 18.50
Katabdin (Maine Charcoal).....	23.50 @ 24.00
Ohio Blackband (40 per cent.).....	18.00 @ 18.50
Lake Superior Coke Foundry, all ore.....	18.00 @ 18.50
Southern No. 1.....	16.25 @ 16.75
Southern Gray Forge.....	14.75 @ 15.25
Jackson County (Ohio) Silvery.....	18.25 @ 18.75

Louisville.

LOUISVILLE, KY., April 25, 1891.

Pig Iron.—A report of the situation to-day can be but little more than a repetition of reports for the last few weeks. The market is one of undoubted dullness; but very few sales have been made, and there is but little inquiry. Consumers report a scarcity of work, and in many instances are merely buying from time to time what they are compelled to purchase, while some claim that they have a sufficient stock to last them for some time at the present rate of consumption, and they see no relief in the way of additional orders until it is unmistakably determined that the year's crop will be good and heavy. There is very little iron in the hands of Southern furnaces, old orders and the few being taken from time to time about keeping pace with the production of those in blast; \$10.25, Birmingham, for Gray Forge seems to be the nominal quotation, though sales are reported at less than \$10. We quote:

Southern Coke, No. 1 Foundry....	\$14.50 @ \$15.00
Southern Coke, No. 2 Foundry....	13.75 @ 14.25
Southern Coke, No. 3 Foundry....	13.25 @ 13.75
Southern Coke, Gray Forge.....	12.75 @ 13.25
Southern Charcoal, No. 1 Foundry....	16.00 @ 17.00
Southern Car Wheel.....	17.00 @ 20.00

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, April 28, 1891.

[[The crop reports are generally of a most favorable character from all parts of the country, but this, to a considerable extent, is offset by labor complications; scarcely has one strike been settled before another is inaugurated. The Coke strike is believed to be about over, but the carpenters will go out on May 1 for eight hours. It was expected that the painters and bricklayers would strike for eight hours at the same time, but they have abandoned the scheme for this year at least.

Pig Iron.—There has been considerable of a movement in Bessemer Iron within the past week, sales of some 12,000 to 15,000 tons having been made, nearly all for immediate or nearby delivery, and at an advance of from 50¢ to \$1 per ton. Sales have been made at \$16, \$16.25, \$16.50, \$16.75 and \$17, cash, and it was nearly, if not all, purchased by Carnegie, Phipps & Co. There are sellers for future delivery considerably below the highest price above quoted, but no buyers. The same firm bought a lot of 3000 tons some three weeks ago at \$15.75, so that as compared with the lowest point there has been an advance of \$1.25. In regard to Forge Iron the demand continues light, and prices weak and lower; city furnaces have sales at \$14, cash, delivered at furnace, while some small outside lots were sold as low as \$13.75. Mahoning and Shenango Valley furnacemen are able to get a better price for their iron at home than in this market; sales of these irons to Valley consumers have been reported during the week under review at \$14.20 @ \$14.25. There is very little Bessemer iron remaining either in the hands of furnacemen or speculators, it having been cleaned up pretty well the past week by the Carnegie interest. The demand for Foundry irons continues light, and prices are weak and in buyers' favor, while the demand is chiefly for small lots to supply immediate wants. We quote as follows:

Neutral Gray Forge.....	\$13.75 @ \$14.25, cash
White and Mottled.....	13.25 @ 13.75, "
All-Ore Mill.....	14.50 @ 14.75, "
No. 1 Foundry.....	15.75 @ 16.00, "
No. 2 Foundry.....	14.75 @ 15.25, "
No. 3 Foundry.....	14.00 @ 14.25, "
No. 1 Charcoal Foundry.....	23.00 @ 24.00, "
No. 2 Charcoal Foundry.....	21.00 @ 22.00, "
Cold Blast Charcoal.....	25.00 @ 27.00, "
Bessemer Iron.....	16.75 @ 17.00, "

The quotation for Bessemer is for immediate or nearby delivery; it is being offered for future delivery at \$16.50, cash, without finding takers.

Muck Bar.—Is quotable at \$26 @ \$26.50, with a sale of 1500 tons reported at \$26 and 1000 tons at \$26.50. There is considerable op the market and still lower prices are not impossible.

Manganese.—There have been no sales of 80 % domestic Ferromanganese reported above \$66.50, cash, but the indications are that prices will go still higher, as foreign cannot now be laid down in Pittsburgh at the price quoted. Carnegie, Phipps & Co. are now supplying the home market pretty fully.

Manufactured Iron.—The fine weather as well as favorable crop reports are to a considerable extent nullified by the labor complications, which are having a damaging effect upon the market for Finished Iron, hence orders are not coming forward as freely as they should or usually do at this season of the year. There is no question that the labor troubles have caused a great many contemplated improvements to be abandoned for this year. Prices continue weak and it is possible that desirable orders might be placed under our lowest quotations. City manufacturers quote Bars at 1.70¢ @ 1.75¢, full extras; Plate and Tank, 2.10¢ @ 2.15¢, and No. 24 Sheet at 3.80¢ @ 2.85¢, all 60

days, 2 % off for cash. Well posted brokers say that 1.55¢ is the best they can do with valley mills, half extras, and that some of the valley mills refuse to quote under 1.60¢. Skelp Iron is still quotable at 1.65¢ @ 1.67½¢ for Grooved, and sheared at 1.85¢ @ 1.90¢, four months, 2 % off for cash.

Nails.—There is a fair business in Steel Cut Nails, but prices show no improvement. Desirable specifications are still quoted at \$1.55, 60 days, 2 % off for cash f.o.b. at factory, and orders not so desirable at \$1.58 @ \$1.60. It is claimed that the prices quoted do not cover cost of production, and it is not strange, therefore, that the report comes from Wheeling that one concern down there is about to go out of the business. The Wire Nail trade is also dull, but an increased demand is looked for later on. Prices remain about as last quoted, \$2.05, although it is intimated that a desirable order might be placed at \$2.

Structural Iron.—Continues dull, unusually so for the season, which may be attributed largely to labor trouble, causing a great many contemplated improvements to be held in abeyance, and some have been abandoned for this year. Prices continue weak, but we repeat quotations of last week: Channels and Beams, 3.10¢; Angles, 2.05¢; Tees, 2.65¢; Steel Bridge Plates, 2.30¢; Universal Mill Plates, Iron, 2.10¢; Refined Bars, 1.85¢ @ 1.90¢.

Steel Plates.—Trade continues slow and prices are weak. Fire Box, 3.90¢ @ 4.25¢; Flange, 2.70¢; Shell, 2.45¢ @ 2.50¢; Tank, 2.10¢ @ 2.15¢. Business is being solicited, and when this is the case buyers have the advantage.

Merchant Steel.—There is no improvement to note in the demand, which appears to be chiefly of a hand-to-mouth character, and while we make no change in our quotations it is possible that for a desirable order they would be shaded. Bessemer Tool Steel, 7¢ @ 8¢; do. Machinery, 2.40¢ @ 2.50¢; Crucible Machinery, 5¢; do. Spring Steel, 4¢; Bessemer Spring Steel, 2½¢; Tire Steel, 2.20¢; Steel Bars, 2.20¢.

Wrought-Iron Pipe.—There does not appear to be much improvement in the demand, but it is expected that there will be within the next few weeks. The recent reduction in prices was made to stop cutting, but if reports are to be credited it has not wholly done so. However, it is expected that there will soon be sufficient business for all, and until there is more or less cutting is to be expected. Discounts are quoted as before: On Black Butt Pipe, 57½ %; on Galvanized do., 50 %; on Black Lap, 67½ %; on Galvanized do., 55 %; Boiler Tubes, 2½ inches and smaller, 55 %; 2½ inches and larger, 60 % off; Casing, all sizes, 55 %.

Old Rails.—There has been a little more activity in Old Iron Rails the past week, with sales of several lots to buyers in the Shenango and Mahoning valleys, and at Columbus, Ohio, at prices ranging from \$23.50 to \$24 for Standard, and \$23 for Light Rails. Old Steel Rails sold at \$17 @ \$17.50 for short and mixed lengths. A lot of Frog and Switch Steel Rails sold at \$16. It is expected that there will be an improved demand as the season advances. The supply of the former is known to be light and growing less all the time, as no new ores are being made.

Wire Rods.—Continue dull, and in the absence of sales it is difficult to give reliable quotations. It is intimated that desirable orders could probably be placed at \$36, at makers' mill, whereas a broker reports that the mill he represents declined an order at \$36.75 on cars at mill.

Billets and Slabs.—There has been increased business in Billets the past week,

but prices show no improvement. We are advised of a sale of 1250 tons here and 3000 tons at Wheeling, both at \$25, f.o.b. at makers' mill. It was rumored that a sale had been made at \$24.75, but it could not be traced to any reliable source. Slabs about the same in price as Billets.

Barb Wire.—Business is still reported light, while prices remain unchanged. Glidden Painted, \$2.85; do. Galvanized, \$3.40; Four Point Painted, \$2.80; do. Galvanized, \$3.35, in car lots, at makers' works.

Steel Rails.—Heavy sections are still quoted \$30, f.o.b. at mill. The Edgar Thomson Works are again in operation, and, according to report, have a good many orders booked.

Railway Track Supplies.—Spikes remain unchanged at \$2.05, 30 days, for either Iron or Steel, f.o.b. at makers' works; Splice Bars, standard sections, either Iron or Steel, 1.85¢ @ 1.95¢; Track Bolts unchanged at 2.80¢ with Square and 2.90¢ with Hexagon Nuts.

Scrap Material.—There is a freer demand, but at lower prices. Sales of Wrought Scrap at \$19 @ \$20, net ton; Iron Car Axles \$25.50 @ \$26.50; Cast Scrap, \$14, gross; Old Car Wheels, \$16 @ \$17; Rail and Bloom Ends, \$17 @ \$17.50.

Connellsville Coke.—Operations in the Coke region are gradually extending and the strike, according to present indications, will soon be a thing of the past. The H. C. Frick Coke Company have started several of their works under the scale recently posted at their different works, and from present indications will in a few days have all the men they require. Under no circumstances will the labor leaders be recognized.

(By Telegraph.)

There is continued inquiry for Bessemer Iron for immediate delivery, and as it is getting scarce the market is firm. Sales of 1000 and 500 tons at \$17 and 1500 tons at \$17.25, all cash. Also sales reported of 1000 tons Muck Bar at \$26, cash, and 1000 tons Steel Billets at \$25.50, on cars at Wheeling. The Coke strike is still on, but it is believed that the end is near at hand.

Cleveland.

CLEVELAND, April 27, 1891.

Iron Ore.—Despite the protestations of local papers that the Ore market is still quiet, it can be authoritatively announced that some very fair sales have occurred during the past week or ten days. These sales include quite liberal quantities of Republic Ore at \$5.25 @ \$5.50 per ton f.o.b. vessels, lower lake ports, and 40,000 tons of non-Bessemer Menominee Ore at \$3.50 @ \$3.75. Sales from the Champion have also been made at \$5.25 @ \$5.60, and additional amounts of Ore from the Ashland, Norrie and other Gogebic mines have been let go at figures varying but slightly from \$4.50 f.o.b. vessels Cleveland. We also hear of quite liberal sales of non-Bessemer No. 1 Secular and Magnetic Ores at \$4.25 @ \$4.50. Only a few trifling amounts of Menominee Bessemer seems to have been actually sold, perhaps not over 25,000 or 30,000 tons. The price was about \$4.50. The total sales of Gogebic Bessemer at about the same figures aggregate, perhaps, 150,000 tons. The sales just made by the Republic are reported to be quite heavy. Altogether 600,000 tons of Ore may have been disposed of during the past

week, at prices varying from \$1 to \$1.50 below the ruling quotations last season. It is expected now that some very heavy sales will be made during the next two weeks, possibly aggregating 1,500,000 tons. Some of this goes east of the Alleghenies, but not a little of it to the valleys south of here. It seems probable that some of the sales recently closed are conditional or made upon the sliding scale plan, but enough Ore has been let go outright during the past week to fix the following as about the market prices:

No. 1 Specular and Magnetic Ores, Bessemer quality.....	\$5.25 @ \$5.50
No. 1 Specular and Magnetic Ores, non-Bessemer quality....	4.25 @ 4.50
Gogebic Ore, Bessemer quality..	4.50 @ 4.75
Menominee Ore, Bessemer quality	4.50 @
Menominee Ore, non-Bessemer quality.....	3.50 @

The Ore men seemed to have failed entirely in their efforts to reduce the cost of getting the Ore from the mines to the upper lake harbors, as well as from the lower lake ports to the inland furnaces. Consequently the reduction in the price of Ore to the furnaces must be jointly borne by the mine owners and the vessel men, with, perhaps, incidental cuts in wages. During the past week vessels have been engaged to bring Ore from Ashland to Cleveland and Ashtabula at \$1 per ton. This would seem to indicate an 80¢ rate from Escanaba, with 85¢ or 90¢ from Marquette. Last season's Ore is going forward to the furnaces very slowly. The shipments from April 1 but slightly exceed 35,000 tons, while for the same period last year 85,000 tons were shipped away. There seems to be no immediate prospect of the opening of navigation to the Ore ports. Indeed, a glance at the ponderous stocks of Ore now on the docks would seem to indicate that no additional shipments should be expected for several months to come. It is possible that many of the purchases already made were by buyers who were satisfied that prices would go no lower, and were anxious to insure themselves the amounts necessary to help them over another year.

Pig Iron.—The market is more active and prices are firmer than one week ago. One firm wrote East on Saturday offering all the Forge Iron they had on hand to clean up their yard. The price was named at \$16 cash, at the furnace. To-day a telegraphic order was received for the entire amount. Bessemer Iron is also firmer and quite a number of sales are reported. Better business is anticipated next week.

Manufactured Iron.—The market is only fairly active, scattering sales being reported at 1.55¢ @ 1.60¢. Several of the foundries, however, report good business.

Scrap.—Not very much is being done beyond a few sales of No. 1 Railroad Wrought at \$20.

Old Rails.—About \$24 is the ruling quotation, with but few sales reported.

Financial.

A revival of speculation in some of the large commodities based on crops not yet grown and a foreign demand for consumption not yet realized is the leading feature of the week. Stocks on the two rival exchanges became buoyant, the aggregate sales reaching no less than 2,600,000 shares. Wheat trading in options comprised the enormous total of about 120,000,000 bushels, not to speak of heavy trading in the West. Sales of cotton amounted to 680,000 bales. The future of the money market occasioned some concern, on account of the depleted condition of the National Treasury. Two measures were decided on by Secretary Foster to

prevent the threatened deficit. One was the suspension of further redemptions of 4½ % bonds under the call of October 9 last and the other was the immediate recoinage of the trade dollar bullion. These devices, with a call upon the banks for \$8,000,000 or \$10,000,000, will suffice to meet the pension demands of \$30,000,000 or more on June 4. Speculators were reminded, however, that at a later date the Treasury will not possess its usual power to meet the demands of those who clamor for aid in moving the crops to market. Exports of gold, as reported by the Custom House, were \$3,651,000 and there are further engagements. The state of our foreign trade encourages the hope of a reflux wave. Although exports from the United States in March fell \$2,000,000 short of the imports, the fact was due to excessive importations of sugar and tin plates, the former to anticipate the removal of duties April 1 and the latter in anticipation of the advance July 1. Expectations are also based on the probability that Germany will be opened to American pork and France to American flour. The exact terms of the new reciprocity arrangement with Spain in regard to trade with Cuba will probably be made known soon after the return of the President from the West. Navigation at Duluth opens with 700,000 bushels of grain loaded for Buffalo, and it is said that one-half the stock in Chicago will be shipped across the Atlantic early in May. A reduced freight tariff based on the rate of \$1.07 first class from New York to St. Paul, via the West Shore and the Canadian Pacific, was put into effect by the "Soo" line and is likely to provoke retaliatory action. A general break down of the coal miners' strike seems probable.

The stock market was active and strong, transactions double those of the previous week. Bonds, too, were again buoyant. Toward the close there was reaction, under realizing sales. Aside from continued exports of gold and railroad friction in the Northwest, influences were favorable. The grangers advanced on excellent crop reports and favorable weather; the Vanderbilts on a good investment demand; the Villards on the statement that the recent selling was by German houses to take profits on stocks bought during November last, and the Gould specialties on the announcement that Mr. Gould will attend the meeting of the Advisory Board in this city May 6. On Monday there was free selling, induced by reports of an unsettled tone in Paris due to the failure of the Portuguese loan and dearer discounts in London. On Tuesday stocks were less active but strong. London bought about 10,000 shares of Louisville and Nashville. Reaction was caused by the discovery that the Ninth National Bank has lost about \$400,000 through the defalcation of President John T. Hill, whose recent death resulted in investigations showing that he had been stealing the bank's money for years. The institution is still solvent, owing to its holdings of valuable real estate. The Court of Appeals at Albany affirm the judgment of the lower court in the action of Shipman, Barlow, Larocque & Choate against the Bank of the State of New York, which gives that firm \$223,084. The bank resisted payment because it had paid the money out on checks drawn by James E. Bedell, a former clerk of the firm, now in State prison for forgery.

Exports of merchandise from New York for the week were \$7,106,000; imports, \$13,974,600.

United States bonds are quoted:

U. S. 4½s, 1891, registered.....	101
U. S. 4½s, 1891, coupon.....	101
U. S. 4s, 1907, registered.....	121
U. S. 4s, 1907, coupon.....	121
U. S. currency 6s, 1895.....	113

Bar Silver closed in London at 44½d. per ounce, and in New York at .97½ @ .97¾ per ounce.

One hundred and ten shares of Western National Bank sold at 100½.

The weekly statement of the associated banks was favorable. The expected depletion was more than offset by the return of currency from the West, in addition to disbursements by the Treasury. There was an increase of \$2,655,000 in surplus reserve, which now stands at \$6,975,128. Loans were contracted \$5,263,000.

Time money for short periods on good collateral, 5%. Commercial paper dull; endorsed bills receivable, 5½%, and first-class single names 6 @ 6½%.

Bankers' sterling was advanced to \$4.86½ @ \$4.90.

Exchanges of 58 cities last week showed a decrease of 2.8%. Outside of New York the decrease was 2%. New York decreased 4.5%; Boston, 5.7%; and Philadelphia, 15.6%. Chicago increased 9.5%. Southern points were more active.

In the merchandise markets speculative commodities were active and excited, reacting at the close. On Monday wheat broke 3¢ ½ bushel, with little export interest, and flour sympathized. Corn broke 5½¢ and was pressed for sale. Refined sugar was dull. Pork and bacon irregular. Lard lower at the close. Coffee firmer. In dry goods more inquiry; outlook for fall business better than a year ago. Print cloths of 64 x 64 grade declined to 2½¢, which is as low a price as known in the history of the trade. Wamsutta fine sheetings ½¢ lower. Cotton quiet. An object of great interest in the provision trade was the arrival via the New York Central and Hudson River Railroad of ten cars of lard, which had been shipped from Fort Worth, Texas.

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, April 29, 1891.

American Pig.—The first signs of a temporary scarcity of Iron are reported from the West, where spot Bessemer has advanced to \$17, although May delivery is offered at low prices, coupled with the proviso "in case the Coke strike is settled." In this market the situation has not changed. Northern brands are quoted \$17 @ \$18 for No. 1, \$16 @ \$16.50 for No. 2, and \$14 @ \$14.50 for Gray Forge. Southern Iron sells at \$16.50 @ \$17.25 for No. 1, \$15.50 @ \$16.25 for No. 2, and \$14 @ \$14.50 for Gray Forge.

Ferromanganese and Spiegeleisen.—All Manganiferous material is exceedingly dull. We quote 80% Ferro, \$63.50 @ \$64, which is the equivalent of the English combination price.

Billets and Rods.—Some special Slabs have sold for Eastern delivery at a low price lately, and the reports from the West make prices on ordinary Billets there as low as \$24.75 @ \$25, which is close to the lowest figures touched. In Eastern Pennsylvania the delivered price is \$27.50 @ \$27.75. Rods are dull in this section. The West quotes \$36 @ \$36.50. Wire Rods are being offered at \$38, at mill, by at least one works.

Steel Rails.—The market has relapsed into dullness, not a single sale of any magnitude being reported by the Eastern mills, who continue to quote \$30.75 @ \$31 at tidewater, while Pittsburgh asks \$30 and Chicago \$31 at mill. In some cases brokerages are being paid. We print elsewhere a series of tables showing the monthly cost of making Rails at a leading mill.

Manufactured Iron and Steel.—The trade is agitated over the proposed State bill relating to Iron in buildings, which is

construed into an attack on the rolling mill interests in favor of the Architectural Iron works. At the same time a matter has been given publicity which has been the subject of comment in the trade for some time past. The leading Architectural works of the city sent a circular letter some time since to the structural mills protesting against the action of some firms in bidding for work over their heads. In their eagerness to secure work the representatives of at least two mills are said to have gone to the customers of the architectural works. The majority of the mills, however, protect the latter. Within a day or two at least two large contracts, involving 1000 tons of Beams each, are to be placed. The quantity of work in sight is satisfactory, but prices continue low. We quote Angles, 1.95¢ @ 2.10¢; Sheared Plates, 2¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2¢ @ 2.15¢ for Tank, 2.3¢ @ 2.6¢ for Shell, and 2.5¢ @ 2.7¢ for Flange, on dock. Bars are 1.7¢ @ 1.9¢, on dock.

Rail Fastenings.—A meeting is being held in this city by the Spike manufacturers, who have endeavored to shroud their purposes in mystery. It is understood, however, that an effort is being made to advance prices, and \$2.25 is spoken of as the figure to be arrived at. The leading mills are represented, and some of them have given orders to withdraw quotations. The trade has been in a demoralized condition, due to general dullness and to the struggle between the Southern mills. The trade will receive any announcement of an advance with the skepticism which past signal failures in the same direction warrant. A new Spike mill is to start at an early date at Allentown, Pa. We quote Fish Plates 1.70¢ @ 1.80¢; they have sold as low as 1.67¢, delivered. Bolts are 2.65¢ @ 2.85¢.

Old Material.—The market is lifeless. Mills within reach of this market decline to take any interest, but intimate that their views approach \$31 at Jersey City. In one case an Eastern mill has bid equivalent to about \$21.50 at Jersey City. Foreign lots here are being held at \$22.50 @ \$23, and upward.

B. M. Jones & Co. of Boston, sole representatives in the United States of Samuel Osborn & Co., Sheffield, England, manufacturers of the Mushet Steels, have opened a branch office at 143 Liberty street, New York. They are also sole representatives of the Taylor Yorkshire Bar Iron for Stay Bolts, Piston Rods, Crank Pins, &c.

Walter Scranton, formerly of the Scranton Steel Company and now sales agent of the Lackawanna Iron and Steel Company, has removed his office to 52 Wall street.

Coal Market.

The Reading Railroad has secured the Manhattan Elevated Railroad contract for broken Coal for another year. It is said the same price was obtained as paid last year, and that the contract was simply extended. It calls for about 400,000 tons delivered alongside docks in New York city. The disposition to buy coal by large contractors imparts more life to the market, with the effect of making firmer prices. Although the domestic sizes are dull and in excessive supply those adapted to manufacturing are in good request. The companies claim that the official schedule is maintained without reduction. Individuals are still shading, and report that Coal is moving once more freely. The Reading is working on full time. Production for the week was 593,921 tons; for the year 9,653,592 tons, an increase over last year to date of 1,739,673

tons. The Reading tonnage for the week was 220,000 tons. A liberal movement of Coal is going on from Port Richmond to Eastern points. The Pennsylvania tonnage for the week was 285,394 tons; Coke 39,420 tons.

Individuals are selling Broken and Chestnut at \$3.35; Egg, \$3.45, and Stove, \$3.60, f.o.b., which are the net of circular prices, commission off. The companies are not making prices for future delivery, though they are 25¢ @ 35¢ higher than a year ago.

The Bituminous Coal operators no longer apprehend a general strike, the break in Ohio having affected Pennsylvania, and differences, it is believed, will be adjusted. The Frick Company are sending forward more Coke than at any time since the strike commenced at the Coke ovens. Coal has lately been sent from Philadelphia to Hamburg, Palermo, Cuba, Colon, Porto Rico, Martinique and St. Thomas by steamers, and shipped in sailing vessels to San Francisco, Laguayra and Mexican ports. These shipments were not made in ballast, but on orders for commercial use. Coal is going from the Virginia Coal fields to Spain and Brazil. Shipments continue from Baltimore and a permanent foreign trade is hoped for.

The railway Coal operators in the Pittsburgh district took advantage of the failure of the eight-hour movement and unanimously agreed to cut the present wages paid for mining Coal. The reduction will range from 5 to 9 cents per ton mined.

Metal Market.

Pig Tin.—There has been a slight turn for the better in prices, due chiefly to a reaction in London, at which center late heavy drafts upon supplies are having some bearing upon the market. A fairly active business here, outside of the speculative arena, has also served to give the market better tone, and trading in futures has reflected somewhat greater confidence. The fact remains, however, that supplies on the spot and afloat for this point are unusually heavy, and further improvement in values here is dependent in a good measure upon the course of the London market. Spot stock has been sold at 19.60¢, net cash, for prompt delivery; 19.65¢ @ 19.70¢ was paid for May; 19.75¢ @ 19.80¢ for June, and 19.80¢ for August. Wednesday's market was quiet, but a further rise in London quotations acted as an obstacle in the way of lower values here. Ten-ton lots on the spot were quoted at 19.65¢ @ 19.70¢ and smaller quantities at 19.80¢ @ 19.90¢ from store.

Pig Lead.—The market is firmer, in sympathy with reports of fairly large purchases at 4¢ in the West, or an equivalent of 4½¢ in New York. While business would thus appear to be more active at Western centers, there has been but little improvement in sales in the local market, and the demand is very little, if at all, better than it was a week ago. However, holders are now generally asking 4½¢ for carload or larger lots, delivery this month or next, and 4.20¢ is apparently a strictly inside rate. During the week about 500 tons have been sold here at from 4½¢ for prompt up to 4½¢ for future deliveries.

Copper.—There are no signs of increase in the demand from any quarter and the home trade buying thus far this month has been rather disappointing. Meanwhile production has continued, on a large scale, and it is no secret that a considerable accumulation at the primary sources of supply has taken place. The offering reflects no great pressure to sell, however, and prices are remarkably well maintained in the face of the prevailing dullness. Lake Superior Ingot is still quoted at 13½¢ @ 13¾¢, and offers of 14¢ for considerable

quantities of Wire Bars for delivery during the year are said to have been refused. Arizona Ingot is still quoted at 12½¢ @ 12½¢, and common casting Copper at 11½¢ @ 11½¢, according to brand.

Spelter.—Prime Western has been selling at 4.90¢ @ 4.95¢, in carload lots, but to a moderate extent only, and as low as 4.80¢ has been touched on inferior brands. The market would thus appear to be quite as flat as it was a week ago, and the demand at present affords no encouragement to expectations of immediate improvement.

Antimony.—The demand is moderate and the market barely steady, with Hallett's quoted at 15½¢, LX at 16½¢ and Cookson's at 16½¢, in wholesale quantities.

Tin Plate.—Business has been slow throughout the week. From current importations there has been more or less offering at irregular prices, but the concessions appear to have had little or no influence with buyers in this or other markets. Futures are practically neglected at the moment. Quotations for large lots on the spot are as follows: Coke Tins—Penlan grade, IC, 14 x 20, \$5.20; J. B. grade, do., \$5.27½; Bessemer do., \$5.22½; Siemens Steel, \$5.35. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.75; Siemens Steel, IC basis, \$5.85; IX basis, \$6.85. IC Charcoals—Melyn grade, \$6.25; for each additional X add \$1.50; Allaway grade, \$5.85; Grange grade, \$6; for each additional X add \$1. Charcoal Terns—Worcester, 14 x 20, \$5.50; 20 x 28, \$10.50; M. F., 14 x 20, \$7.20; do., 20 x 28, \$15; Dean, 14 x 20, \$5.15; do., 20 x 28, \$10.25; D. R. D. grade, 14 x 20, \$4.87½; do., 20 x 28, \$9.75; Mansel, 14 x 20, \$5; do., 20 x 28, \$9.85; Alyn, 14 x 20, \$5; do., 20 x 28, \$10; Dyffryn, 14 x 20, scarce; do., 20 x 28, \$10.50. Wasters—S. T. P. grade, 14 x 20, \$4.75; do., 20 x 28, \$9.50; Abercarne grade, 14 x 20, \$4.70; do., 20 x 28, \$9.40.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, April 29, 1891.

There has been a livelier speculative movement in Pig-Iron warrants, and prices show a further improvement, more particularly on Scotch and Hematites. The turn for the better in prices is due chiefly to scarcity of Scotch warrants, and consequent difficulty of operators on the "bear" side to arrange settlements. There are now 54 Scotch furnaces in blast. Export demand is slow and home trade buying merely fair, but stocks show a further decrease. Latest sales of warrants were at 45/6 for Scotch, 39/ for Cleveland and 48/6 for Hematite.

The Pig-Tin market has been stronger, and, following a decline to £88. 15/, due to pressure of cash lots for sale, a reaction to £90. 10/ took place. The bulk of stock on the spot and to arrive is strongly held. There is, however, but little outside speculative interest at the present time.

In Copper there has been little movement, and prices, although slightly lower than they were a week ago, have undergone very little change during the past few days.

The demand for Tin Plate has been very fair, but wide difference between buyers' and sellers' views restricts business. Al-

though most of the makers have decided to suspend work during July, it is uncertain whether the agreement will be carried out. About one-fifth of the makers hold aloof, although recognizing the fact that mills must stop to prevent increase in stocks.

Some improvement is noted in the Steel trade. West Cumberland makers have booked large orders for Rails, some of which are said to have been for American account.

Earl Dudley's Works, at Brierley Hill, have been formed into a company, with a capital of £202,000.

Scotch Pig Iron.—Prices for makers' brands are irregular, and business continues slow:

No. 1 Coltness, f.o.b. Glasgow.....	63/
No. 1 Summerlee, " ".....	60/
No. 1 Gartsherrie, " ".....	60/
No. 1 Langloan, " ".....	49/6
No. 1 Carnbroe, " ".....	61/6
No. 1 Shotts, " at Leith.....	54/
No. 1 Glengarnock, " Ardrossan.....	50/6
No. 1 Dalmeilington, " ".....	54/
No. 1 Eglinton, " ".....	50/6

Steamer freights, Glasgow to New York, 2/; Liverpool to New York, 10/.

Cleveland Pig.—There is no improvement in the demand, and prices are barely steady. Makers quote 38/9 for No. 3 Mid-dlesborough, f.o.b.

Bessemer Pig.—Business is still on a moderate scale and prices are rather easy. Makers quote 49/6 @ 50/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—The offering is freer and prices have receded slightly. English 20 % quoted at 95/, f.o.b. shipping port.

Steel Rails.—There has been a very good demand and the market is quite firm. Heavy sections quoted £4. 12/6, and light sections £5 @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Demand continues light, and prices are rather weak at £4. 5/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—The movement has been slower this week, but prices are steadier. Bessemer, 2½ x 2½ inches, quoted at £4. 7/6 @ £4. 10/, f.o.b. at N. W. England shipping point.

Steel Slabs.—Business moderate, and prices without change. Bessemer quoted at £4. 7/6 @ £4. 10/, f.o.b. at N. W. England shipping point.

Old Iron Rails.—The demand is moderate and prices remain as before. Tees quoted at £3 @ £3. 2/6 and Double Heads £3. 2/6 @ £3. 5/, f.o.b.

Scrap Iron.—The market is quiet, and prices are a shade easier. Heavy Wrought quoted at £2. 5/ @ £2. 7/6, f.o.b.

Crop Ends.—There has been no change. Demand is slow. Bessemer quoted at £2. 15/ @ £2. 17/6, f.o.b.

Tin Plate.—A very fair business to-day and prices steady. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade.....	19/ @ 19/3
IC Bessemer Steel, Coke finish.....	17/ @ 17/3
IC Siemens " ".....	17/3 @ 17/6
IC Coke, B. V. grade.....	16/9 @
Charcoal Terns, Dean grade.....	16/9 @ 17/

Manufactured Iron.—Prices are wholly unchanged, and the market remains quiet. We quote, f.o.b. Liverpool:

Staff. Marked Bars.....	£ s. d.	£ s. d.
" Common ".....	6 5 0	6 7 6
Staff. Bl'k Sheet, singles.....	6 5 0	6 17 6
Welsh Bars (f.o.b. Wales).....	5 15 0	6 0 0

Tin.—Market firm to-day but quiet. Straits quoted at £90. 7/6, spot, and £90. 10/ for three months' futures.

Copper.—No change in the situation to-day. Demand is moderate. Merchant Bars quoted at £51. 2/6, spot, and £51. 10/, three months' futures. Best Selected, £56/.

Lead.—Dealings moderate and little change in prices. Quoted at £12. 7/6 @ £13. 10/ for Soft Spanish.

Spelter.—The market quiet but steady at £22. 10/ for ordinary Silesian.

New York Metal Exchange.

The following sales are reported:

THURSDAY, April 23.

55 tons Tin, May.....	19.45¢
25 tons Tin, June.....	19.50¢
75 tons Tin, May.....	19.50¢

(Seller's option after 25th.)

FRIDAY, April 24.

40 tons Tin, May.....	19.50¢
16 tons Lead, spot.....	4.15¢

MONDAY, April 27.

10 tons Tin, delivery May 1.....	19.45¢
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TUESDAY, April 28.

10 tons Tin, spot.....	19.60¢
10 tons Tin, August.....	19.80¢
10 tons Tin, delivery May 4.....	19.65¢
25 tons Tin, May.....	19.65¢
25 tons Tin, June.....	19.75¢
10 tons Tin, delivery May 4.....	19.65¢
10 tons Tin, August.....	19.85¢
10 tons Tin, June.....	19.80¢
16 tons Lead, June.....	4.22¢

Imports.

Hardware, Machinery, &c.

Barbour Bros. & Co., Mach'y, cs., 5
Bahamas Iron Mfg. Company, Mdse., cs., 31
Baker, Hermann & Co., Arms, cs., 52
Crabb, W. & Co., Mach'y, case, 1
Coventry Machinists' Company, Bicycles, cs., 3
Drexel & Co., Mach'y, pgs., 4
Eau Claire Linen Company, Mach'y, pgs., 12
Field, Alfred & Co., Mdse., cs., 5
Hammacher, S. & Co., Nails, cs., 41
Hoe, R. & Co., Mach'y, pgs., 17
Immediate Transportation Company, Mach'y, pgs., 10
Jordan, A. J., Ice Machine Tubes, bdls., 100
Johnson, J. & Co., Mach'y, pgs., 41
Lau, J. H. & Co., Arms, cs., 16
Mecham Arms Company, Mdse., cs., 15
Olshesheimer, Theo. & Bros., Ironware, cs., 3
Sheldon, C. W. & Co., Arms, cs., 5; Chains, 5
Schoverling, D. & Co., Bicycles, crates, 4
Taylor, Thos., Mdse., cs., 2
Werlemann, H., Arms, cs., 6
Wiebusch & Hilger, Chains, cs., 25
Order—Chains, cs., 3; Chains, 1; Crank Pins, 108; Mach'y for Vera Cruz, pgs., 202; Mach'y, cs., 2; do., pgs., 4

On Saturday, April 25, a meeting was held at the Engineers' Club of the Central Committee of the American Reception Committee, which was formed last spring to organize the meetings and excursions of the Iron and Steel Institute and the Verein Deutscher Eisenhüttenleute. Among the members present were Andrew Carnegie, chairman; Charles Macdonald, Prof. Henry Morton, John Stanton, R. W. Hunt, George A. Crocker, W. P. Shinn, Dr. R. W. Raymond and C. Kirchhoff, secretary. The report of the committee appointed to audit the accounts of the treasurer was accepted and a resolution was unanimously passed expressing the gratitude of the Reception Committee for the faithful, earnest and brilliant work done by the treasurer, George A. Crocker of New York. The aggregate of the amounts received and expended was very large, and the outlays were kept within the sums obtained by subscription for transportation and subsistence. The secretary was instructed to convey to the local committees, firms and individuals who contributed to make the undertaking a success the grateful appreciation of the Central Committee.

HARDWARE.

Condition of Trade.

OUR ADVICES INDICATE a continued improvement in the business done by jobbing houses in different parts of the country, and it is evident that the prevalence of good weather is stimulating trade. Hardwaremen, however, are not purchasing very freely, but are limiting their orders to goods that are required to replenish their assortments and to seasonable specialties, in which there is considerable activity. While there has been no improvement in price, the market is characterized by a somewhat better tone, and while complaints in regard to the spring business are not infrequent, there is a general feeling that the outlook on the whole is encouraging and that a satisfactory trade may be expected. While the general financial condition is regarded as showing marked improvement, there is a good deal of complaint about collections.

Chicago.

(By Telegraph.)

Jobbers of Heavy Hardware report a marked improvement over last week, which was the worst so far this year. The demand is running into all lines, showing that manufacturing consumers are very busy. In Shelf Hardware there has also been a decided change for the better, and the volume of business is now more satisfactory. Refrigerators, Wire Cloth and Steel Goods are in very active demand, as well as Builders' Hardware and Mechanics' Tools, but staple goods are not moving so freely. The roads have dried up in the country by this time, but, as had been expected, the season is now so far advanced that farmers are plowing and seeding and have no time to make improvements in buildings and fences. That trade will come later and is expected to be the heavier for the delay, as it will come all at once. Prices are unchanged, except Roofing Plates are slightly weaker, but this is regarded as only temporary, owing to heavy stocks in the hands of some holders.

St. Louis.

(By Telegraph.)

April closes with a record for volume of trade which is quite an improvement over the month of March. The outlook for May is considered more than ordinarily bright, and unless something unforeseen happens it is more than probable that May will prove a busy month in the Hardware trade. Staple goods are moving freely. Barb Wire is in good demand. Wire Nails are stagnant, although, with the amount of building in progress and in preparation, it seems quite likely that an early improvement will be felt in this

commodity. There are no changes in prices to note.

Notes on Prices.

Cut Nails.—Since our last report the market shows little improvement in the volume of business. Quotations are on the basis of \$1.60 at mill, in round lots, with the usual averages, but this price is shaded in special cases. In this market the quotation of \$1.65 @ \$1.70, f.o.b. New York, is made, and it is reported that sales have been made at slight concessions from this figure. Small lots from store are held regularly at \$1.75 @ \$1.85 for Iron and Steel, with a concession of 5 cents on larger lots. There is, however, a tendency to sell Steel Nails at prices closely approximating those of Iron.

Chicago, by Telegraph.—Steel Nails are very quiet, but vigorous efforts are being made by some manufacturers to force business by very low quotations. The usual price for factory lots is still \$1.75, Chicago, but this is shaded by more than one seller. Jobbers quote \$1.85 from stock, but shade this price to best buyers.

Wire Nails.—The market is in substantially the same condition as at our last report. Stocks are apparently accumulating somewhat in the manufacturers' hands and the trade are showing a disposition to withhold their orders except where goods are needed, and stocks in jobbers' hands seem to be thus far sufficient in most cases for their requirements. Notwithstanding the disposition on the part of the manufacturers to maintain prices the market has a rather weak tone, and it is understood that some exceptionally low quotations have been made to large purchasers. The quotation for round lots at mill remains \$2.05 to \$2.10, an advance, according to the views of the manufacturers, being demanded for small lots.

Chicago, by Telegraph.—In Wire Nails inquiries keep up and sales are perhaps a little better to the medium buyers. The heavy trade, however, seem to be well stocked yet, and are not inclined to buy until they believe they are getting bargains. The manufacturers held a meeting at Cleveland last week and resolved to resist efforts of buyers to force prices lower, but rumors are current that offers have been made by some maker at a shade better than anything previously named. The usual price for lots from factory is \$2.12½, Chicago. Jobbers quote \$2.25 for small lots from stock.

Barb Wire.—There is little new to report. Stocks in dealers' hands are in most cases sufficient for present requirements. Prices are, as a rule, well maintained, and the market has an excellent tone, the understanding reached by the manufacturers in regard to patent matters and the apparent harmony in which they are working together giving the trade confidence in the maintenance of prices.

Chicago, by Telegraph.—The manufacturers are in receipt of numerous inquiries and orders are again becoming plentiful. Trade promises to be very active in a short time. Jobbers report their stock moving off fairly well, with the prospect of heavy business in a week or two. Prices are holding up better than was expected.

Oil Stones.—The Pike Mfg. Company, Pike Station, N. H., desire us to announce to the trade that all quotations on Washita and Arkansas Oil Stones are canceled after May 1. We are also advised that the company have contracted with George Chase of New York for the entire production of his factory of Washita, Arkansas and other Oil Stones, after May 15, for five years.

Family Grindstones.—We are requested by the Cleveland Stone Company, Cleveland, Ohio, to state that the general discount on their Family Grindstones is 20 per cent., instead of 33½ per cent., as announced in our last issue. Their list on these goods, we are advised, is lower than that of other manufacturers.

Granite Baking Dish.—St. Louis Stamping Company, St. Louis and New York, quote their new Granite Iron Ware Baking Dish with Nickel Receptacle at the following prices, which are subject to the discount of 33½ and 10 per cent.:

No. 102, 4 pints.....each,	\$2.50
No. 103, 6 pints.....	3.00
No. 103½, 7 pints.....	3.50

Glass.—The flutter of excitement caused by the somewhat sudden advance in Glass has subsided, and there is little of interest to note in the Glass market. Prices are quoted by New York jobbers who handle Pittsburgh Glass at 80 and 5 per cent. discount for first bracket and 80 and 10 per cent. discount on larger sizes, with a freight allowance on car lots of not less than 400 boxes from factory. These prices correspond with those made at Western factories. New Jersey Glass factories are making prices in a great measure in proportion to their need of cash. Factories that can hold their Glass until after the blow out in June or July will be benefited by so doing, in getting the advanced price for their product at that time. We understand that some small dealers who have stocked up at a low price are selling at better figures than those agreed upon at the meeting recently held in Chicago by the manufacturers. At 80 and 5 per cent. discount for first-class American and 75 and 10 per cent. discount for second-class French net prices of some sizes in the first bracket are about the same as of French Glass. The first bracket includes the size 10 x 15. Printed Pittsburgh discounts on Glass are as follows:

	Per cent.
For carload lots.....	80 and 10
Less than carloads.....	80 and 5
American Plate.....	50, 10 and 5
Imported Plate.....	60

French Window Glass remains un-

changed at 75 and 10 per cent. discount, with an additional 5 per cent. discount when 50 boxes are ordered and taken in any calendar month.

Slates.—A revised price-list of School Slates is announced by the manufacturers, under date April 1. It is subject to the following discounts on D Slates, according as the goods are shipped from New York or factory:

	New York.	Factory.
On 1 case or over.....	55 %	55 and 5 %
On 10 cases or over....	60 %	60 and 5 %
On 25 cases or over...	60 and 5 %	60 and 10 %

statement is, however, erroneous, and the trade will please note that C. E. Neale, Worcester, is putting the goods in question on the market.

BLODGETT & CLAPP COMPANY, Hartford, Conn., Iron and Steel Merchants, are sending to the trade a calendar for 1891. Surrounding the date sheets are tables of the weights of the following articles: Weight per foot of Flat Bar Iron per 10 feet of Square and Round Iron; per set of Round Edge Tire Steel; per square foot of Galvanized Sheet Iron; per square foot of Black Sheet Iron; weight and capacity of Side Springs; weight of

designed to carry, and all through the building the best and most modern devices are used that experience and thought could suggest. One hundred and fifty incandescent electric lights are in operation when needed. The enterprise and growth of the company are illustrated in this notable enlargement of their facilities.

E. BLAIR, Bucyrus, Ohio, issues a circular in regard to certain Corn Huskers, which are put on the market, as being an infringement of his patent August 7, 1888, and dealers are cautioned against handling them. The circular gives illustrations of the Corn Huskers in question.

AT THE ANNUAL MEETING of the Yale & Towne Mfg. Company, at the Company's office, Stamford, Conn., April 23, 1891, the following directors were elected: Henry R. Towne, Stamford, Conn.; Schuyler Merritt, Stamford, Conn.; George E. White, Stamford, Conn.; M. F. Merritt, Stamford, Conn.; Beauveau Borie, Philadelphia, Pa.; Thos. F. Keating, New York, N. Y.; Floyd H. White, Philadelphia, Pa.; Walton Ferguson, Stamford, Conn.; William F. Donovan, Stamford, Conn. At a subsequent meeting of the new board of directors the following officers were elected: Henry R. Towne, president; Schuyler Merritt, secretary; George E. White, treasurer; Thos. F. Keating, assistant treasurer, and William F. Donovan, general manager. The company announce that, having increased their facilities nearly 100 per cent. they are now able to fill all orders for Locks and Art Hardware promptly, and the delays which have heretofore occurred from the large demand for these goods will thus be averted. Subjects from special designs will be executed in as short time as the character of the work will permit.

THE RICHARD THOMPSON COMPANY, Steel Wire Nails, Galvanized Sheet Iron, Cut Nails, &c., 105 Chambers street, New York, will on May 1 remove to 54 Warren street, where they shall be pleased to see their friends and patrons.

THE HORTON MFG. COMPANY, Fort Wayne, Ind., announce that they are now prepared to furnish their well-known Western Washer with a corrugated galvanized-iron bottom. They refer to the importance of this change, providing as it does a bottom not affected by atmospheric influences. The company invite the trade to write for prices and obtain samples of this machine, feeling assured that a trial will substantiate what is claimed for it. It is also stated that the Washer with wood bottom will be furnished as heretofore.

THE SYRACUSE DOOR HANGER COMPANY, manufacturers of the Economy Parlor Door Hanger and patented Hardware specialties, have just increased their capital stock to \$30,000, all paid in. The extension of their business has justified this increased capital.

THE ADVERTISEMENT of the Eastman & Krauss Razor Company, with factories at Stapleton, S. I., and office and salesroom at 98 Chambers street, New York, will be observed on another page. The company are sole owners of the Home Safety Razor, which they manufacture in connection with other Razors, Razor Strops and Cutlery.

MOORE ELECTRICAL MFG. COMPANY successors to Moore Bros. Electrical Supply Company have removed from their old quarters 106 and 108 Liberty street to the Trio Building, 652 and 654 Hudson street, and 352 and 354 West Thirteenth street, where, they state, they have four times their former capacity for turning out goods.

School Slates.

Sizes.....	4 x 6	5 x 7	6 x 9	6½ x 10	7 x 11	8 x 12	9 x 13	9½ x 14
Cases contain.....dozen	24	18	12	12	10	8	6	5
List price.....per dozen	\$0.45	\$0.50	\$0.72	\$0.75	\$0.80	\$1.00	\$1.20	\$1.60
List price.....per case	10.80	9.00	8.64	9.00	8.00	8.00	7.20	8.00

Assorted Cases, Containing:

Assortm't No. 1...dozen	..	1½	2	2	3	3	..	\$9.50
Assortm't No. 2...dozen	..	3	2	2	2	½	½	\$7.50

The following is the revised price-list of Noiseless School Slates, which is subject to a discount on one case or over of 60 and 10 and 10 and 10 per cent., when shipped from New York, with an additional discount of 5 per cent. in 10 case or larger lots; and when shipped from factory to a discount on one or more cases of 60 and 10 and 10 and 10 per cent., with an additional 5 per cent. in 10 case lots or larger:

Common Axles; of Elliptic Springs, and the weight of Square, Octagon, Round and Flat Steel per foot.

FOSTER & ROBERTSON, Portland, Ore., are sending out additional sheets with gummed edges, for insertion in their catalogue. These sheets relate to Police Goods, Spectacles, Mortise Locks, Pumps, Saws, Screws and Queen Bee Chisels.

THE FIRM of Trimble Bros. & Threlkeld, Wichita, Kan., was dissolved by

Noiseless School Slates.

Sizes.....	Single.					Double.				
	5 x 7	6 x 9	7 x 11	8 x 12	9 x 13	5 x 7	6 x 9	7 x 11	8 x 12	9 x 13
Case contains.....dozen	18	12	10	8	6	9	6	5	4	3
List price.....dozen	\$2.40	\$3.00	\$3.60	\$4.20	\$4.80	\$4.80	\$6.00	\$7.20	\$8.40	\$9.60
List price.....per case	43.20	36.00	36.00	33.60	28.80	43.20	36.00	36.00	33.60	28.80
Assorted, containing...doz	2	3	3	1	..	1	1½	1½	½	..

Assorted.....per case, \$28.80. Either Single or Double.

Handles.—Some of the leading manufacturers of Axe, Pick, Sledge, Hatchet and Hammer Handles have recently adopted a revised list for export trade, by which prices are considerably advanced.

Trade Items.

CHARLES MORRILL, inventor and manufacturer of Morrill's Perfect Saw Set, has recently fitted up a handsome office in the World Building, New York. It is a large and elegantly furnished apartment, with a choice collection of oil paintings covering the wall surface. Mr. Morrill is extremely fond of works of art, and has shown excellent taste both in the selection and arrangement of the collection. The office might easily be taken for an art gallery, and it is a source of enjoyment to the many whose business calls them there.

IN THE DESCRIPTION of Neale's Calipers and Dividers in our last issue, Neale & Goulding, Worcester, Mass., were referred to as the manufacturers. This

mutual consent on April 9, T. B. Threlkeld retiring. N. H. and R. M. Trimble have assumed the assets and liabilities of the firm. They will also continue the business under the firm name of Trimble Bros. & Co.

LEE-CLARKE-ANDRESEN HARDWARE COMPANY, Omaha, Neb., have removed to larger quarters. They have for some time been cramped and crowded for space, but latterly the rapid growth and development of their business has forced them to seek a more commodious building. The new store building is located corner of Harney and Thirteenth streets. It has a frontage on Harney street of 66 feet, with a depth of 135 feet. There are five floors, with basement extending 15 feet under the sidewalk. The offices and sample room extend along the entire front of the building, and are exceptionally well appointed and arranged. The goods are moved to and from the different floors by means of three elevators, located to the best possible advantage. Each floor is supplied with special shelving suitable for the goods it is

UNDER DATE April 30 Russell & Erwin Mfg. Company, New Britain, Conn., and New York, give notice that on and after this date they cannot accept returned goods unless they are faulty in manufacture or have been sent in error.

Production of Cut and Wire Nails in 1890.

FROM THE RECENTLY issued report of the American Iron and Steel Association, giving statistics of the American Iron trade for 1890, we take the following facts in regard to the production of Cut and Wire Nails during the past year. It will be observed that a still further decline is shown in the amount of Cut Nails manufactured and a corresponding increase in Wire Nails.

CUT NAILS.

The statistics which are given in regard to Iron and Steel Nails and Cut Spikes do not embrace railroad and other Spikes made from Bar Iron, Wire Nails of any size nor machine-made Horseshoe Iron Nails. Cut Spikes are included with Cut Nails.

The total production of Cut Nails in 1890 was 5,640,946 kegs of 100 pounds each, against 5,810,758 kegs in 1889, 6,493,591 kegs in 1888, and 6,908,870 kegs in 1887, showing a steady decline.

Twelve States made Cut Nails in 1890. The following table shows the production of Iron and Steel Cut Nails respectively in 1890, and the total production of that year compared with the total production of 1889 and 1888.

In 1884 the production of Steel Cut Nails in the United States (including 500 kegs of combined iron and steel) was only 393,482 kegs, or 5 per cent. of the total Cut-Nail production. Steel was afterward rapidly substituted for Iron, until in 1889 Steel Cut Nails represented 69 per cent. of the total Cut-Nail production of the coun-

The maximum total production of Cut Nails was reached in 1886, with 8,160,973 kegs, and the maximum production of Steel Cut Nails alone was reached in 1888, with 4,323,484 kegs.

The quantity of combined Iron and Steel Nails made in 1890 was about 111,000 kegs, against 113,463 kegs in 1889. These Nails were made in both years in the State

tion, for the few small works which did not report, make the total production in 1890 3,135,911 kegs, nearly all of which were of Steel. The Wire Nails made in 1890 were produced by 47 works.

We give in the following table the production of Wire Nails in 1890 in comparison with that of 1889, in kegs of 100 pounds:

Wire nails—Kegs.	New England, New York and New Jersey.	Pennsylvania.	Ohio.	Other States.	Total.
1889	280,000	816,000	944,000	395,000	2,435,000
1890	335,595	1,061,639	1,115,320	623,357	3,135,911

of Ohio, West Virginia and California. They are included in the table with Iron Nails.

The leading Cut-Nail producing district is the Wheeling district, which comprises Ohio and Marshall counties in West Virginia and Belmont and Jefferson counties in Ohio. The following table shows the production of Iron and Steel Cut Nails in this district in the last five years, and also in Allegheny County, Pa. The production of Allegheny County, which was once very large, has greatly dwindled since 1883, when 627,896 kegs were made:

Districts—Kegs.	1886.	1887.	1888.	1889.	1890.
Wheeling district.....	1,558,551	1,848,116	2,137,845	1,825,956	1,744,385
Allegheny County.....	121,441	277,410	232,762	173,765	52,536

WIRE NAILS.

In 1886 the production of Wire Nails was estimated to have amounted to 600,000 kegs, made by 27 Wire Nail works; in 1887 the production was estimated to have been 1,250,000 kegs, made by 47 works; in 1888 it was estimated to have been 1,500,000 kegs; in 1889 it was esti-

In the "other States" above referred to there are only one or two Wire Nail companies in each State. Their production is therefore aggregated to avoid the possibility of making public the production of any individual establishment.

Protection for Retailers.

A T A MEETING held at 193 Bowery, New York, on the evening of the 23d inst., by those interested in the protection for retail Hardware and Stove dealers, the name of the Hardware and

Stove Dealers' Association was given to the organization. The objects of the association are the mutual benefit and protection of those engaged in these lines of business. J. W. Stantial of New York was elected treasurer. The present officers of the association will hold office for six months.

The next meeting of the association will be held at the Mechanics and Traders' Exchange rooms, 363 Fulton street, Brooklyn, opposite the City Hall, on Tuesday evening, May 12. Notices of this meeting will be sent to the trade.

Trade in North Dakota.

WE HAVE THE following advices from the Higham Brothers' Hardware Company, Grand Forks, N. D., in which the condition of things in that section and the future outlook are reflected:

The general condition of business in this place and throughout this portion of the State may be said to be in a very satisfactory condition. The Hardware business, although subject to sharp and close competition, will compare very favorably with other lines as regards activity. The stocks carried by the several dealers in the city, although not what might be designated as large ones for a place of this size, are sufficiently so to meet the demands of those needing goods in this line. In other branches of business we hear complaints as regards prices, and think that the profits are cut closer than they should be. We know this to be a fact in our line. No indications are visible for a less volume of trade than usual. In fact, judging from

States.	1890—Kegs of 100 pounds.			Total 1889. Kegs.	Total 1888. Kegs.
	Iron.	Steel.	Total.		
Pennsylvania.....	1,035,179	790,645	1,825,824	1,834,899	2,072,969
Ohio.....	46,351	1,372,270	1,418,621	1,546,928	1,522,951
West Virginia.....	1,252	956,442	957,694	980,346	1,145,151
Indiana.....	12,865	217,099	229,964	138,200	175,397
New Jersey.....	257,678	2,689	260,367	252,067	275,591
Illinois.....	.....	130,806	130,806	204,438	241,981
Massachusetts.....	80,573	111,000	191,573	239,908	280,301
California.....	210,000	10,000	220,000	242,000	240,000
Virginia.....	159,114	43,446	202,560	194,998	245,755
Kentucky.....	.....	194,654	194,654	165,000	206,788
Wisconsin.....	3,118	765	3,883	11,435	41,715
Missouri.....	.....	5,000	5,000	.....	.....
Colorado.....	.....	.....	.....	544	44,997
Total Cut Nails.....	1,806,130	3,834,816	5,640,946	5,810,758	6,493,591
Wire Nails.....	.....	.....	3,135,911	2,435,000	1,500,000
Total Nail production.....	.....	.....	8,776,857	8,245,758	7,993,591

try. In 1890, however, the decline in the Cut-Nail production was wholly in Steel Nails, which represented not quite 68 per cent. of the total for that year. A few thousand more kegs of Iron Cut Nails were made in 1890 than in 1889.

mated to have been 2,435,000 kegs, the estimates being based on reports from a large majority of the works. Direct reports which we have received from nearly every works in the country and careful estimates, based on trustworthy informa-

the general tone we confidently look for a material increase in the year's trade. Our building prospects are greatly in advance of any previous year. Facts will demonstrate that this is to be the most prosperous season in our career. Our agricultural prospects are good. The ground is in good shape, seeding is almost under way. We have sufficient moisture to insure good crops provided we receive our customary showers. Collections can be said to be good but once a year in localities where wheat is the principal production. We enjoyed that condition last fall. It is now somewhat the reverse. Traveling salesmen report increased sales and a general feeling of hopefulness. Judging from all circumstances we conclude that the year 1891 will witness for this portion of the State increased prosperity.

Export Trade.

THE LAST MAIL that arrived from Australia and New Zealand, although quite late, was a good one, and everything indicates an improvement in business in the colonies. While there are some complaints as to low prices and close competition, we think that exporters here as a rule are satisfied.

The freight war continues. Melbourne freight is taken at 9 cents, Sydney at 10 cents and Adelaide at 13 cents, and vessels are rapidly loading. The fine ship Kentmere, recently cleared by H. W. Peabody & Co., is one of the finest that has ever been chartered for the colonies, measuring 2400 tons. She has been less than a month loading, indicating the existing activity in trade. Announcement is also made that the new steel steamship Strathdon, 2643 tons register, Pioneer Line, will commence loading at Pier 9, East River, on Monday, May 18. The vessel will be dispatched on or about June 10, carrying freight under through bills of lading to all ports in Australia, Tasmania and New Zealand.

We learn that Mr. Kingsland, who has for a number of years been representing manufacturers in Australia, intends shortly to return to this country and open an office in this city.

Large orders are now in hand with manufacturers of staple lines, notably one order for 1000 dozen Handled Axes, recently placed for a new brand. This is quite an innovation, as heretofore buyers have been very conservative in adhering to old established trade-marks.

Manufacturers as a rule are, as usual, selling their goods at extremely low figures for export, not seeming to realize that it is often on account of the good quality of their wares that they hold their trade in foreign markets, and that price has in many instances little to do with it. Buyers in foreign markets prefer American goods, for the reason that they cannot obtain as good value anywhere else.

The Argentine Republic and west coast trade of South America is at present at a standstill. No change has occurred in the financial standing of those markets, and little will be done until affairs are straightened out. English houses are refusing credits, and affairs must be in very bad shape when the South American buyer cannot obtain credit in the British Islands or the Continent.

We are in receipt of the following advices from an Australian correspondent, which will be of interest as reflecting the condition of things in these colonies:

Trade during the past month has been very quiet throughout the colonies. The failure to float the South Australian loan in London, in consequence of which the Victorian loan has not been put upon the market, has put a damper upon business in these two colonies, which has extended to New South Wales, as the latter colony will probably want to borrow shortly, and the prospects of floating their loan do not look any too bright. The belief is, however, somewhat general that this depression is only temporary, and that we shall soon see a considerable increase in the volume of trade.

There has been a considerable decrease in New South Wales in the imports of wheat and flour during the past year, while the exports of these lines show an increase, thus showing a somewhat important gain for this colony on these lines. The total value of exports of all lines for 1890 exceeds the imports by £553,303, and though this excess is smaller than in 1889 this is largely owing to the lateness of the wool season and the strike, which greatly hindered the export of the same. This, however, has been more than counterbalanced by the excess in value of exports for the past two months over the corresponding months of 1890 and by the falling off in the exports of gold, owing to the better financial position of the colony.

In Queensland the shearers' strike is assuming an alarming condition. The men have taken the law into their own hands, and threaten to burn the country if their demands are not granted. They have already set fire to the grass and attempted to burn wool sheds in several districts. They have also made one attempt to wreck a train, and unless the Government takes prompt steps to protect the rights and property of her citizens from this mob rule serious loss may be occasioned.

Electrical Goods to Carry in Stock.

(Continued.)

THE ELECTRICAL SUPPLY COMPANY, 171 Randolph street, Chicago, recommend the following assortment as a reasonable one for a retail dealer to order:

1 sample Bell Set, mounted on a board and connected, ready for display, net... \$2.25
5 No. 5090 Ajax Bell Outfits, packed ready for the consumer, each..... 2.50

With orders for ten Bell Sets, sample outfit is sent without charge.

1 dozen No. 611 Eureka Wood Box Bells, 3-inch, assorted woods, each..... \$0.65
1 dozen No. 641 Eureka Iron Box Bells, 3 inch, each..... .55
1 dozen Ajax Dry Batteries, each..... .95
1 dozen No. 500 Wood Push Buttons, assorted woods, per dozen..... 1.00
5 pounds No. 18 Annunciator Wire, per pound..... .28

They state that since bringing the Ajax Dry Battery to a point where it is a success, they have solicited trade from a number of the leading Hardware houses throughout that part of the country. They name the following firms as handling their goods: Simmons Hardware Company, St. Louis, Mo.; Hibbard, Spencer, Bartlett & Co., Chicago; Bliss, Bullard & Gormley, Chicago; Wells & Nellegar Company, Chicago, and Dunham, Carrigan & Hayden, San Francisco, Cal.

Moore Electrical Mfg. Company, 652 and 654 Hudson street, New York, at our re-

quest submit the following list of goods and prices as adapted to the wants of the retail Hardware trade:

Oak, Ash and Cherry Push Buttons, each..... \$0.07
Leclanche Disque Batteries, each..... .75
One-Point Hollow Base Switches, each.. .25
Floor Pushes, each..... .50
Combination Floor Pushes, each..... .75
Combination Floor Pushes, 6 feet cord and Pear Push, each..... 1.25
2½ inch Wood Box Bells, each..... 1.00
2½ inch Iron Box Bells, each..... 1.00
2½ inch Skeleton Box Bells, each..... 1.00
Also various sizes of Bells up to 12-inch; Annunciators, 3 drops and upward.

In answer to an inquiry, Patrick & Carter Company, 125 South Second street, Philadelphia, Pa., suggest that the Hardware dealer who is about to take up a line of Electrical Goods will find one of their sample boards of great service. These boards have been prepared especially for dealers who do not care to carry a stock of these goods until they get some idea of the business. The boards are made of hard wood, light or dark, and are 15 x 22 inches in size. The following list of goods are sampled on each board:

No. 1, 4-Number King Annunciator.
No. 2, 2½-inch Wood Box Bell.
No. 3, 3-inch Champion Bell.
No. 4, N. P. Buzzer.
No. 5, One-Point Wood Base Switch.
No. 6, King Bell.
No. 7, Plain Bronze Push.
No. 8, Pear Push and Rosette.
No. 9, Ornamental Bronze Push.
No. 10, Plain Wood Push.
No. 11, Square Nickel Push.
No. 12, Ornamental Push.
No. 13, Floor Push.
No. 14, Desk Push.
No. 15, Door Spring.
No. 16, Window Spring.
No. 17, Door Pull Attachment.

It is stated that all the above goods are connected in complete working order for practical exhibition, with the customers' name in gilt letters on glass. The price, complete, with battery carefully packed and delivered to freight or express company, is \$20.

It Is Reported—

That Thomas W. Herrick, Braintree, Mass., will open a Hardware store in a two-story building which is being erected in that place.

That H. F. Bashford has engaged in the Hardware and Tinware business at Vermillion, Kan.

That Hubbell & Boothe, dealers in Hardware, Stoves, Implements, &c., Chico, Cal., have dissolved. L. L. Hubbell will continue the business.

That E. C. Nuzum & Sons, Hill Top, near Hiawatha, Kan., have purchased the Hardware store of S. M. Brosius & Co., and will move the same to larger quarters.

That L. Mars, who is engaged in the Hardware and Implement business at New Holland, S. D., will move his entire stock to Hornick, Iowa, where he will continue the business.

That the store of J. M. Boehmlier, Gladbrook, Iowa, was recently damaged by fire. The damage was not especially serious, however, and did not interrupt business.

That J. B. Hutton has bought the interest of his partner, John McIntyre, in the Hardware business at Hanover, Ill.

That W. C. Burrows has leased the Hardware store formerly owned by C. N. Wilcox, Cassadaga, N. Y., and purchased a stock of goods.

That Evans Bros. & Lawton, dealers in Hardware, Pierre, S. D., have dissolved partnership.

That J. G. Cummings has opened a new Hardware store at Houston, Texas.

That H. G. Cobb, Rome City, Ind., has enlarged his Hardware store and has bought a large stock of goods.

That F. M. Hall has purchased the interest of his partners in the firm of F. M. Hall & Co., Winlock, Wash. He will continue the business at the old stand.

That J. B. Norton & Co., Richmond, Vt., have nearly completed their new block and are putting in their stock of Hardware.

That Kreider Bros. have recently opened a large and handsome Hardware establishment at Quincy, Ill.

That W. P. Forrester has purchased the Hardware and Stove stock of J. N. Hamilton, Waldron, Ark., and will continue the business.

That J. Yates & Son, Hardware, Rockford, Ill., sold out on the 20th inst. to A. S. Hewitt, who will continue the business.

That the stock of Hardware of James Strudwick, Sandusky, Ohio, has been purchased by T. J. Smith and A. Betts.

That fire on the 23d inst. destroyed the Hardware establishment of C. & R. Scheuer, Nashville, Ill. Loss, \$18,000; insurance, \$8000.

That Charles Morgan, Penn Yan, N. Y., has disposed of his Hardware business to D. A. Ogdere of that place.

That the establishment of the Pierson Hardware Company, Somerville, N. J., was destroyed by fire on the 10th inst. The loss is estimated at \$12,000, on which there is an insurance of about \$8000.

That the Hardware business of J. P. Gray, Fort Wayne, Ind., has been purchased by Adolph Schulte.

An Electrical Catalogue.

ALEXANDER, BARNEY & CHAPIN, 20 Cortlandt street, New York, issue a catalogue relating to general Electrical supplies. The cover is particularly unique in its get up, and



Fig. 660.—An Electrical Catalogue.

is reproduced in accompanying illustration, Fig. 660. It is of heavy paper of fine quality, with a flap folding over the front edges of the leaves, and represented as being closed with an electrical switch in gold and black. The firm's trade-mark, A. B. C., is ingeniously worked in with white letters on a colored background.

The catalogue contains nearly 225 pages, is 7 x 10 inches in size. The same high grade of paper and work displayed on the cover is indicative of the entire book. The goods, of which illustrations, descriptions and prices are given, particularly relate to such appliances as are used in connection with electric lighting and power, being but one branch of their business. The catalogue is very complete in the lines of goods covered; and, in view of the rapidly increasing demand for Electrical supplies, will be of value to those interested in such appliances.

Exports.

SUPPLEMENTARY SHIPMENTS PER S. S. HENLEY, APRIL 16, 1891, FOR SYDNEY, N. S. W.

By R. H. Dana & Co.—3 cases Hardware.
By H. B. Moore.—8 cases Agricultural Machinery.

By Healy & Earl.—1 case Emery Wheels, 1 case Auger Bits, 1 case Bell Punches, 1 case Leather Belting, 1 case Emery Tools, 1 case Oil Stones, 1 case Bell Hooks, 1 coil Wire, 2 cases Twist Drills, 1 case Hardware, 1 bale Rubber Packing, 2 bales and 2 barrels Rubber Belting, 2 boxes Leather Belting.

By W. E. Peck.—2 cases Platedware, 1 case Hardware.

By Arkell & Douglas.—1-6 dozen Choppers, 3 dozen Wringers, 1/2 dozen Pumps, 6 dozen Broilers, 1 1/2 dozen sets Axles, 1/2 dozen Cork Pullers, 1 dozen Call Bells, 20 Lawn Mowers, 1 dozen Saws, 36 dozen Files.

Price-Lists, Circulars, &c.

CLARK, QUIEN & MORSE, Peoria, Ill.: Spring catalogue, 1891. This contains 120 pages, fully illustrated, and relates to Steel Goods, Shovels, Spades, Scales, Tackle Blocks, Carpet Sweepers, Lawn Mowers, Freezers, Curry Combs, Clevises, Barn Door Hangers, Refrigerators, Vapor and Gas Stoves, &c. The book presents a neat appearance and will doubtless be highly appreciated by their trade.

FIELD FORCE PUMP COMPANY, Lockport, N. Y.: Latest improved outfits for spraying fruit trees by hand and horse power. Gem of Texas, Empire Spraying Pump, Perfection Spraying Outfit, Duplex Spraying Outfit, Victor Improved Spraying Machine, Champion Force Pump and Fire Extinguisher, New Knapsack Sprayer, &c. The increased interest which is being taken in spraying makes this catalogue particularly appropriate for this season of the year.

MATTHAI, INGRAM & Co, Baltimore, Md., 64 Reade street, New York: Sheet Metal Goods. Their 1891 catalogue, No. 21, illustrates and gives price-lists of Deep and Shallow Stamped Ware, Spoons, Seamless Steel Retinned and Copper Ware, Royal Patent Pieced Ware, Patent Pieced Ware, Heavy Polished Ware, Embossed Silver Finish Goods, Galvanized Ware, Dripping Pans, Japanned Ware, Stamped Trimmings, Wire Goods and Planished Ware, Granite Iron Ware, &c. A sectional index, indicating the pages devoted to each line of goods, as well as an alphabetical index, are given in the back of the book. The manufacturers state that: Notwithstanding the large line of goods we now make, we are constantly adding such as the trade may demand or ingenuity suggest.

GRAND RAPIDS CYCLE COMPANY, Grand Rapids, Mich.: Clipper Safety Bicycles. The manufacturers state that their 1890 Clipper and Venus Safeties were practically one and the same, in construction, simply a difference in brace rods, &c. For 1891 they make only the Clipper, with its numerous improvements in details of construction and materials. The following changes in the machine are announced for 1891:

Imported Chain, Imported Mud and Chain Guards, Higher Grade and Red Rubber Tires, all important Set and Clamp Screws, their own manufacture, Steel Cranks, Higher Grade Saddle Leather, Improved Chain Adjustment, improved manner of attaching Spokes, better finish in enamel and nickel, and new Dress Guard for chain.

BRYDEN HORSE SHOE COMPANY, Catauqua, Pa.: Boss Horse and Mule Shoes. The points of excellence are named as perfect shape, smooth finish, splendid fullering, accurate punching, no bulges, no fins, round outside edge, good toe, solid heels, stiff quarters, beautiful concave and well-proportioned web. Tables are given of the average weight of each Shoe and the average number of Shoes in each keg.

BURLINGTON BLIND COMPANY, Burlington, Vt.: Baldwin's Sliding and Venetian Blinds, Ordinary English Venetian Blinds and Favorite Sliding Window Screens. In connection with these goods the manufacturers state that they have as good facilities for furnishing first-class work in every respect as any manufacturer of Blinds; and that they have succeeded in overcoming many of the serious defects in these classes of Blinds heretofore put upon the market. Numerous illustrations show the Blinds adapted to various style windows, verandas, &c.

CLEVELAND RUBBER COMPANY, Cleveland, Ohio: Mechanical Rubber Goods, Specialties, Cotton Hose, &c. A self-addressed postal accompanies their catalogue containing a list of Rubber Goods of their manufacture, on which the recipient is requested to check such as he uses, and they will quote prices. In addition to the list of goods on the postal, they manufacture a full line of Rubber Clothing and Druggist Sundries, for which they issue separate lists.

TIFFIN AGRICULTURAL WORKS, Tiffin, Ohio: Hay Tedder. The points of excellence claimed for this Tedder are that the axle is of wrought iron, and extends through from wheel; that the crank shaft is of wrought iron, solidly secured at its connections by malleable-iron sleeves; that the wood work is of the best quality, and nicely finished; that the forks are crucible steel, oil tempered; and that the Tedder is entirely under the control of the operator.

GIBBS' MFG. COMPANY, Canton, Ohio: Gibbs' Lawn Rake; Canton Lawn Rake, both improved for 1891; Favorite Lawn Rake, all steel; Gibbs' Post-Hole Digger, Imperial Post Hole Digger, Gibbs' Potato Digger and Grape Hoe, and Little Gem Lawn Hose Holder. The manufacturers state that their trade-mark, recently adopted, will appear on all goods manufactured by them.

Handbook for Salesmen.

We give below the substance of a convenient and suggestive pamphlet by C. S. Andrews, Danbury, Conn., which, relating as it does to the duties of a salesman, and giving suggestions in regard to the principles by which he should be governed, will be found of interest to many of our readers. We are advised by Mr. Andrews that the book was written with no thought of its getting into the papers, and he also explains that many of the suggestions in it have been compiled from different sources, but mainly from the writings of J. E. Powers of New York. Our readers will, however, observe that Mr. Andrews has contributed not a little from his own experience and has succeeded in putting his maxims in clear and forcible form. It opens with the following preface:

The suggestions and directions printed in this little book are mainly based upon the experience of other and successful merchants, and are such as seem to me likely to help you to most efficiently serve your own, your customers' and your employer's interest.

Those parts of the rules intended to explain or define your relations to the busi-

ness and its management are not thought or intended to place any restrictions upon you which are not necessary for the maintenance of an amount of discipline which will, all things considered, tend to make your services more acceptable to yourself and your employer.

The suggestions in regard to selling goods grow out of and are consistent with this thought: The relation you bear to customers is that of rendering service to them. The more intelligently and acceptably you serve the customers' best interest, the more acceptably will you serve the interests of your employer.

You ought to understand this thought thoroughly. Perhaps a careful reading of what you will find between these covers will help you to such an understanding.

GENERAL MANAGEMENT OF STOCK.

The assignment of any clerk to any department does not give him exclusive control of the sale of the goods in his department, for all clerks are fully authorized to sell at any time from any part of stock. Neither does it in any sense authorize him to manage the department either as to the amount, variety, or prices of goods; but it does indicate that, together with his other duties, he will be held strictly responsible for the care of the stock in his department, with reference to the following particulars:

FIRST.—CONDITION.

All goods must be kept clean, free from dust, and conveniently arranged and attractively displayed on shelves and counters.

N. B.—Any rearrangement of goods must be first approved by the head clerk.

SECOND.—AMOUNT.

All goods must be fully replenished from reserved stock. And any goods wanted must be recorded on order book at once.

THIRD.—PRICES.

All goods must be kept properly marked, and price-lists conveniently placed.

FOURTH.—SUGGESTIONS.

Use the early part of the day and the last hour before closing for sorting and straightening up stock. Always put stock in order when through waiting on customers.

Prices are not to be cut. Investigate carefully any customer's claims of overcharge or undercharge, and report to head clerk any cut price of other firms, after the customer has gone, unless he is a well-known and regular customer, in which case report at once.

Watch the ends of stock, make as few as possible, and always work them off first to keep the stock clean.

Care for your stock that nothing be stolen or injured.

Employees pay for whatever they damage carelessly. They are placed on their honor to report and pay for it.

OFTEN ASK YOURSELF:

Is my stock as clean, well arranged and displayed as giving first attention to business permits?

Are all goods properly marked. And do price-lists correspond with latest quotations?

Is my stock kept fully up to the trade's demands, in quantity, variety and quality of goods?

What goods can be profitably added to present stock?

Are there any goods in my stock on which, for any reason, prices should be cut to force or encourage their sale?

Are any of the prices too low when compared with those of competitors?

How can I increase the sale of goods in my department?

Do I give my stock that thoughtful attention and care which may be properly expected of me?

CREDIT SALES AND CHARGES.

Clerks will avoid the responsibility of trusting customers whose credit is unknown to them by referring all such cases to the head clerk or to "the office." Extending credit without authority makes the clerk responsible for the amount.

Always charge goods first in your pass book. Make out the bill from the charge in the book. This should be an invariable rule.

Make your charges accurate in detail or description, by number, size, &c.; by so doing it facilitates correction in case of dispute with the customer. Always indicate on charge to whom goods were delivered. Make it an invariable rule to fix and extend prices wherever possible.

If you have a charge to make enter it before waiting on another customer; your memory may be defective and the sale forgotten before it is entered. If a customer is waiting while you are writing, explain to him the reason of your delay. Don't be uncivil.

SUGGESTIONS.

Your relations to your employer should be on the basis of mutual and cordial respect and regard. You are entitled to and should receive just, fair and considerate treatment in all your relations to the business. If you feel that you are treated unfairly by any one connected with the store, or if you feel in any way aggrieved, do not hesitate to state your case fully and freely. You are promised a prompt and businesslike adjustment of any grievance.

Your employer is entitled to and should receive your most intelligent and faithful services in trying to carry out such rules and instructions as he may deem best for the proper conduct of his business. Any suggestions or criticisms as to your services should be considered as having been made with the purpose of aiding you to become a more efficient helper and salesman.

Toward those higher in authority in the store be polite and serviceable, responding to every call promptly and willingly.

Toward your fellows be modest, obliging, courteous and helpful. You cannot render full service without being on good terms with them.

Business is business, and during business hours attention should be given to business. All discussion with customers or between clerks of political, social, society or other outside matters are not absolutely prohibited, but should be cut short and avoided as far as it is possible to do so without discourtesy to your customers or friends.

Loud or boisterous talking, singing and whistling should be avoided during business hours; it is uncivil and impolite in the presence of customers.

Be clean in your person, linen, finger nails and breath. You cannot use tobacco or spirits without offense. You cannot afford the offense.

Do not smoke during business hours or in or about the store.

Employees are requested to wear their coats in the store. It is not pleasant for a lady to have a gentleman waiting on her in his shirt sleeves, or with his hat on.

If an employee desires to buy anything from stock he should buy it of the head clerk; in no case take anything without doing so.

In purchasing for individual use around town in no case use the name of the store as a means to buy cheaper.

Clerks of other dealers are to be charged regular retail prices, unless lower prices are allowed, when the matter is referred to the head clerk.

You will be asked to do as little work as possible after business hours. When demanded by the necessities of business, a willing and hearty response will be appreciated.

If you think of any opportunity for the improvement of the business management of the store, or for the better management or care of stock, report your thought at once to the head clerk or your employer. It will be appreciated and impartially considered.

SELLING GOODS.

The relation you bear to customers is that of rendering service to them. The more intelligently and acceptably you serve the customer's best interest, the more acceptably will you serve the interests of your employer.

Towards all customers be invariably polite, attentive and serviceable, whether they be agreeable or disagreeable, considerate or exacting, without regard to their looks or position, unless indeed you are more polite and attentive to the ignorant and humble.

Tell the truth, and nothing but the truth. Call goods by their right names. If they are known by other names, it may be worth while to say so. If you have occasion to say what goods are made of, do so; if you do not know and cannot find out, say so if necessary. Be very careful not to give your customers an exaggerated idea of the merits of any goods you are showing them. In no case, if you can help it, sell anything on a misunderstanding of its quality, price or value.

Your work is selling. Your most important virtues in business are those that count for most in the long run in selling, that is, being agreeable, diligent, ready, quick, patient, watchful, helpful, trusty and true. You cannot always sell; but, whether you sell or not, deserve the good will of every one. The loss of a sale is a trifle, the loss of a customer's confidence is a loss of business. If you do your part for both, good will and confidence, sales will take care of themselves.

(To be continued.)

Premium Purchase Tickets and Coupons.

AS A MEANS of attracting cash trade, premium purchase tickets have become quite popular with some lines of busi-

this way, while at the same time cash trade was promoted.

The ticket in Fig. 2 represents \$50 of purchases, and when this amount is punched out it is given in exchange for a portrait copied from a photograph fur-

regard to Premium Purchase Tickets can be obtained from R. S. Peale & Co., 315 Wabash avenue; G. P. Schack & Co., 229 Fifth avenue, and the Columbian Portrait Company, 179 Wells street, all of Chicago, Ill. The advantages resulting from cash sales are too well understood to need enlarging upon. The tickets cost the customer nothing; they are an inducement to

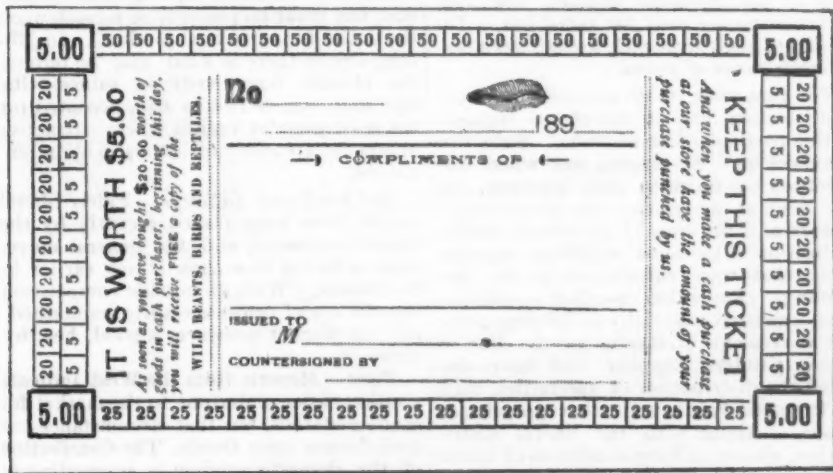


Fig. 1.—\$20 Premium Ticket.

ness, and it may be that a description of the plan would be suggestive for Hardware merchants, some of whom might adopt it, with perhaps some modifications as to premiums, or in other details. The coupon system is also being used, and while this does not aim so much at a cash business, it does away with disputed accounts and also with bookkeeping. For the benefit of those who wish to substitute some plan for the credit system, we will describe both systems.

We give below representations of two premium tickets, with which different kinds of premiums are given. Fig. 1 represents \$20 in cash purchases. When this amount has been punched out of the ticket it may be exchanged for a designated premium, which, in this case, is a copy of a book, entitled, "Wild Beasts, Birds and Reptiles." This book is described as attractive in appearance, containing nearly 400 illustrations, and costs the merchant, we understand, \$1 per copy by

nished by the customer. These portraits cost the merchant, we are advised, from \$1.50 to \$3 each. In some cases, where the

Merchants Retain this Leaf.

CREDIT COUPONS.

\$10.00

These Coupons are to be paid for by the Customer when used. Time limited to . . . days.

Received this . . . day of . . . 189 . . .

of . . . Coupons No. 2476

To the value of \$10.00 which I hereby agree to pay said party . . . days

from date with interest after maturity at . . . per cent.

Fig. 4.—Receipt for Coupon Book.

higher priced picture is given as a premium, the customer pays \$3 for the frame and the portrait is given free. These schemes are referred to as making new

of coupons bound in book form and perforated, as shown in Fig. 3. The sample book before us is for \$10, numbered 2476, with blank space on the front cover for the name of the merchant, and also of the person to whom the book is issued. It is stated upon the cover that these coupons are payable in merchandise only, and are not transferable for good if detached. A book of this size contains 8 coupons of 50 cents each; 12 of 25 cents; 4 of 20 cents; 16 of 10 cents; 8 of 5 cents; 8 of 2 cents, and 4 of 1 cent. In the back of the book is a receipt or note, as shown in Fig. 4, numbered to correspond to the number on the cover. This is filled out by the merchant and signed by the person receiving the book, at the time of issue. This is filed away in the safe, and by reference to these receipts the merchant can tell at any time the amount of credit business he is doing. When the coupons are exhausted the receipt or note becomes due, and is collected as any note would be. When goods are purchased the customer tears an amount of coupons from the book corresponding to the amount of the purchase, and hands them to the salesman as

200	200	200	200	200	200	200	200	200	200	200	200
50	100	100	100	100	100	100	100	100	100	100	50
25	25	PREMIUM PURCHASE TICKET. Bring This Card When You Trade. Have the the amount of your purchase cancelled on the margin and when you have bought \$50 we will present you FREE an elegant ENGLISH PASTEL complete with handsome frame and Crystal Glass. This offer is for Cash Only.								25	25
25	25									25	25
25	25									25	25
50	50	50	50	50	50	50	50	50	50	50	50
50	50	50	50	50	50	50	50	50	50	50	50

Fig. 2.—\$50 Premium Ticket.

the hundred. The merchant to whom we are indebted for this information states that several new customers were gained in

trade and gaining customers, one merchant having put out 350 pictures during last December and January. Information in

money. In some cases the customer prefers paying cash for a book rather than signing the receipt. The advantages claimed for the coupon system are that it avoids mistakes, gives customers no chance to dispute accounts, and merchants no chance to commit errors; causes no delay in the hurry and excitement of business; saves the expense of a bookkeeper, and does away with pass books, to satisfy suspicious customers. Further information as to this system may be obtained from D. O. Lantz, 25 Michigan avenue, Chicago.

Our readers will understand that these systems are efforts, more or less successful, to increase trade and avoid some of the evils connected with extended credits. We should be pleased to hear from any who have tried them in regard to their practical working, or to receive suggestions as to other methods by which the same objects may be attained.

Rack for Cross-Cut Saws.

BASCHE & CO., Baker City, Ore., of whose store we gave a description in our last issue, have a convenient arrangement for displaying and holding their stock of cross-cut saws, an illustration of which is shown in Fig. 661. There

is referred to as being well suited for this purpose and as displaying the saws in an attractive manner.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

The past week, to all accounts, has been a satisfactory one to merchants engaged in this particular line of trade. Some few instances may be singled out where distribution has failed to gain headway, but the general movement has proved satisfactory and the close of the month finds a realization of the most sanguine expectations that were entertained at the beginning. Favorable weather conditions have assisted materially in helping along the movement of staples in the line of house painters' supplies and have also aided the distribution of specialties, such as Prepared Paints and other proprietary goods. Along with the liberal distribution, almost uniform steadiness of values is to be recorded. Only remote instances of any deviation from prices current previously this month come to notice, and where such experience is encountered the exception is confined to a few lines of goods that outside manufacturers or jobbers may put in under special conditions at

in corrodors' prices, and none seems likely to follow the lower cost of crude material that has prevailed during the past fortnight. The volume of business keeps fully up to the average for the season, and outside competition is no more formidable than has been encountered previously since the opening of the spring season. Cheap Leads are doubtless finding quite liberal sale, but make no perceptible inroads upon the outlet for corrodors' product. In jobbing circles there is what may be termed the chronic irregularity in values, with 6½¢, and even as low as 6¼¢, accepted for the most popular brands where attractive orders for a variety of goods may be involved.

Red Lead and Litharge.—Fairly liberal orders have been placed recently by the larger consumers, and the general movement is better now than it was earlier in the month. With no outside competition the old line of prices is readily maintained, and the market preserves a good, healthy tone.

Zines.—Reports from the West indicate a rather easier undertone to the market for crude materials, but that circumstance has no influence upon Oxide. The distribution of the domestic product is proceeding in such a satisfactory manner that manufacturers find no difficulty in maintaining prices, and jobbers keep well up to former figures on small quantities also. Foreign brands are quoted as heretofore, and the market for the same, as well as for domestic product, seems to be in very good shape.

Paris Green.—Manufacturers not identified with the combination are quoting ½¢ below the prices recently adopted by the associated concerns, and the market is rather dull as well as irregular.

Colors.—The movement in nearly all lines of Dry Colors has continued fairly active, and there is still a very steady movement of Oil Colors and Ready-Mixed Paints. Prices are steady nearly all along the line. In the few instances where concessions from generally quoted rates are made the cut is no greater than has been made previously this month.

Miscellaneous.—Further large purchases have been made of Block Chalk for future shipments, and large consumers now have their wants for some time ahead well covered. The foreign market is higher, and prices here remain very firm. Whiting and Paris White are meeting with brisk movement at full former prices. There is merely the routine demand for Barytes, Terra Alba, China Clay and Talc. Prices for Terra Alba are a trifle easier, but otherwise no change is noticeable.

Oils and Turpentine.

There have been very few and only unimportant changes in this line during the past week. Nothing has occurred in the market for raw materials calculated to influence either buyers or sellers in any marked degree, and the relation of supply and demand has continued favorable for good distribution at steady prices in nearly all departments. As a rule supplies are well under control and in such shape that any decided movement of values either way in the immediate future seems improbable. The tendency is, if anything, more in sellers' favor than in the opposite direction.

Linseed Oil.—Local crushers report a continued good demand for their product, and the distribution at present is undoubtedly as satisfactory as it has been at any previous time since the spring season opened. The movement this way of outside brands is not in excess of the average amount, and what stock does come forward seems to be disposed of at full former prices, indicating that the agreement between local and out-of-town producers is rigidly adhered to.

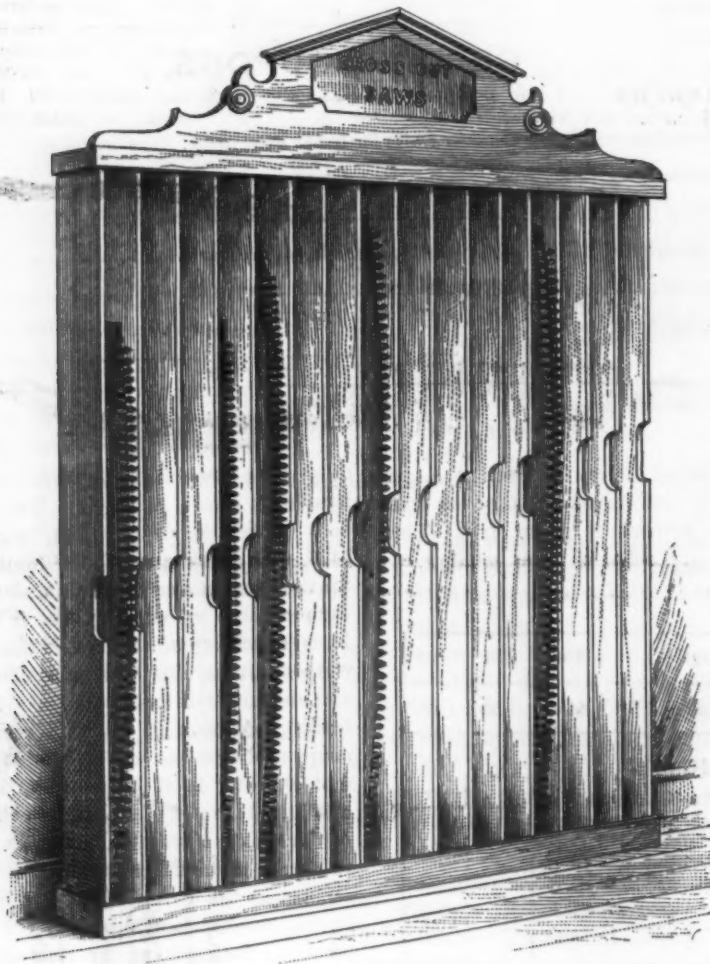


Fig. 661.—Rack for Cross Cut Saws.

are 16 partitions, which are 7 feet high and 9 inches deep in the clear; the rack is 7 feet long. Each of the uprights has a cut, as shown in the illustration, these cuts commencing about 20 inches from the top, and running diagonally across the front. The top of the rack is tastefully ornamented with scroll work. The rack

slight concessions. Nothing has occurred in the movement of base materials to disturb confidence of buyers in the slightest degree, nor are there any signs of impending adverse movement. In short, the conditions all along the line augur favorably for a steady business at good prices.

White Lead.—There has been no change

The Famous Lawn Cutter.

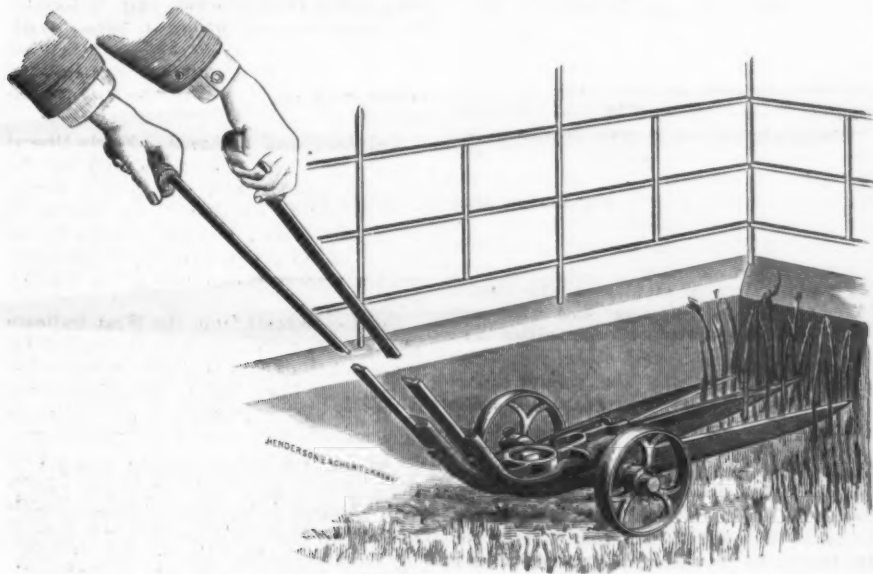
Dille & Anderson, Richmond, Ind., are manufacturing this article, the operation of which is represented in the accompanying cut. The cutter is referred to as strong and self-sharpening. It will cut and trim where this work cannot be performed with a grass hook. The machine cuts right

where these kinds of stoves are sold it will be found an especially desirable article to handle.

Combination Plyer.

The Cincinnati Tool Company, Cincinnati, Ohio, are introducing a Combination Plyer, as illustrated herewith. It is de-

covering the top of the stack on which the arrester is placed. The interior, Fig. 2, is a scraper in the form of an iron reel, to which is fastened the frame work that supports the fingers. These are designed

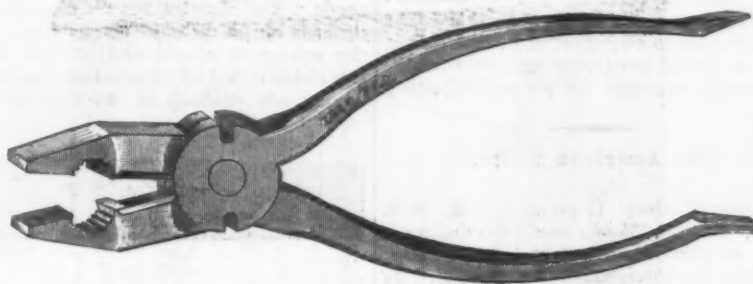
*The Famous Lawn Cutter.*

and left, the cut being 5 inches wide. The weight of the cutter is 9 pounds and the length of its blades 8 inches.

Sherwood's Laundry Wax Block.

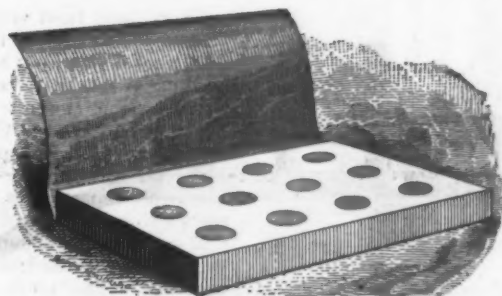
The Bodine Roofing Company, Mansfield, Ohio, are introducing a Wax Block, as illustrated herewith. It is 5½ inches long, 3½ inches wide, and is made of paper board pasted together. It has 12 ½ holes, ½ inches deep, filled with wax. It is designed for cleaning, smoothing and waxing sad irons. In using the block the heated iron is rubbed over it, which melts the wax coming in contact with it, and it is stated deposits a thin film of wax on the under side of the iron and removes rust, starch or other extraneous matter. When the top of the block becomes soiled or the wax exhausted, the top layer can be pulled off, and a fresh, new surface brought into use, so that the entire block can be

scribed as being made of the very best steel, well tempered and finished, being a combination of a flat nose and gas plyer

*Combination Plyer.*

with wire and side cutters, screw drivers, and reamer at the end of the handle. The point is made that every care is tak-

the vane rotates the scraper in one direction, thus compelling it in a short time to make a complete revolution and to clean the entire surface of the screen. The points are made that it is a safeguard

*Sherwood's Laundry Wax Block.*

utilized. The convenience and economy of the block is compared with the inconvenient and wasteful manner in which beeswax is used by housekeepers for cleaning sad irons. It is claimed that one block will last an ordinary family from 18 months to two years. The manufacturers state that gas and gasoline stoves are particularly trying on sad irons and that this wax block is effective in removing their bad effects. It is suggested that in stores

to make this the best article of the kind in the market.

Martin's Ratchet Spark Arrester.

Edmond Martin, Potsdam, N. Y., is introducing a spark arrester, as illustrated in Fig. 1. The outer part of the arrester consists of a large cylindrical screen cage, capped by a conical section, thus entirely

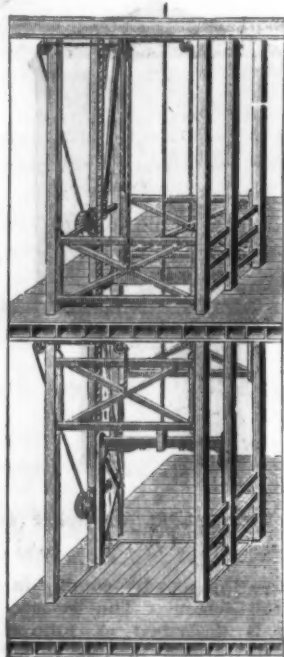
*Fig. 2.—Interior Construction of Martin's Spark Arrester.*

against fire, and that it can be used on a much shorter stack, thereby saving expense.

*Fig. 1.—Martin's Ratchet Spark Arrester.*

Automatic Safety Gate.

Richmond Safety Gate Company, Richmond, Ind., are introducing a safety gate, as illustrated herewith. The manufacturers claim that in its mechanical construction it is perfect, doing the work thoroughly; that it is self-adjusting, easily and quickly put in operation, without interfering with the regular use of the ele-



Automatic Safety Gate.

vator; that there is no fear of accident when the automatic safety gate is used, as it never fails to swing or shut, and that it does its work positively and noiselessly, preventing accident by its self-adjusting power.

The American Filter.

Dunne Cutlery Company, 103 Milk street, Boston, Mass., are introducing a filter, as illustrated in Figs 1. to 4. Fig. 1 shows the household filter, one-third its



Fig. 1.—Household Filter.



Fig. 2.—Barrel of Filter.

actual size. Fig. 3 is the barrel of the filter, which is filled with animal or bone charcoal. Fig. 3 is a sectional view of the filter when in operation, and the

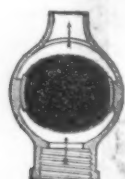


Fig. 3.—Position in Operation.



Fig. 4.—Position for Washing.

position of the filter when opened for washing is shown in Fig. 4. The handle as shown in Fig. 1 is turned to an up-

right position to cleanse or wash the filter. The manufacturers claim that it is a neat, simple and effective water filter, that can be attached by any one and never need be removed from the faucet.

Special Wood-Turners' Tools.

Chas. A. Strelinger & Co., Detroit, Mich., are introducing a special line of wood-turners' tools, as illustrated in Figs. 1 to 7, inclusive. The above firm state

quality of steel and evenly tempered. The average length is 12 inches, $\frac{3}{8}$ inch thick from $\frac{1}{4}$ to $\frac{1}{2}$ inch and $\frac{7}{16}$ inch thick from $\frac{3}{8}$ to 1 inch. The beader, Fig. 3, is adapted for face plate work, and is tapered, like the Hustler, from top to bottom, to give clearance. It is remarked that operators will appreciate being able to purchase ready-made beaders. The extra heavy turning chisel, as shown in Fig. 4, is made of an average length of 13 inches and of 13 widths, from $\frac{1}{4}$ to 2 inches. The screw tenoner, Fig. 5, is referred to



Fig. 1.—The Hustler.—Front View.



Fig. 2.—The Hustler.—Back View.

that the designer and manufacturer of these tools has had nearly 30 years' experience in this line in the largest furniture shops in the world, and that these tools are the direct result of his experience and

as a most satisfactory tool, and as cutting tenons in both hard and soft wood, being easily adjusted to any size up to $1\frac{1}{4}$ inches. The cutting blade is from $2\frac{1}{4}$ to $2\frac{3}{4}$ inches long from shoulder, and $\frac{1}{4}$ and $\frac{9}{16}$ inch



Fig. 3.—Beader.

needs. The Hustler, Figs. 1 and 2, wood-turner's chisel is used for cutting in on the square or round and heading work. It is claimed that by its peculiar shape wood turners are enabled to accomplish from

wide, the bottom prong being a little narrower than the top blade to give clearance.

The shape tenoner, Fig. 6, is recommended to all wood turners. They are

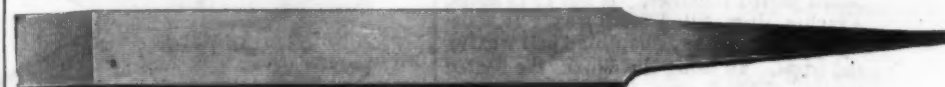


Fig. 4.—Extra Heavy Turning Chisel.

25 to 50 per cent. more work than with any other tool manufactured. The Hustler is beveled from top to bottom and tapered from front edge to shank, thus giving a clearance, and without binding.

carefully manufactured and nicely finished. They have two cap screws and three holes for adjustment.

The combination Hustler and sizer is referred to as an improvement over the

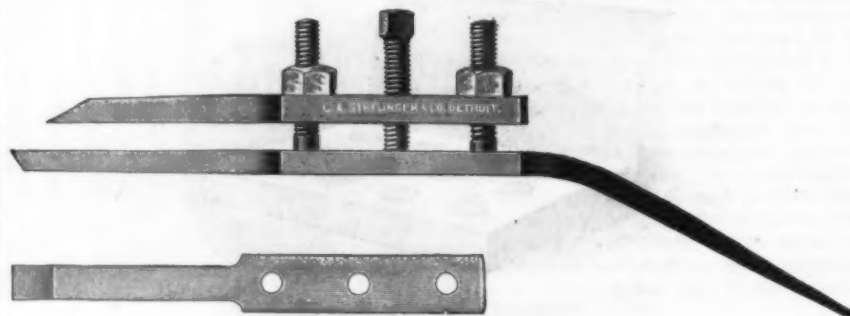


Fig. 5.—Screw Tenoner.

They are grooved on top the full length of the blade, with a flange on each side, leaving a lip projecting slightly beyond the edge of the tool, the lips cutting across the grain, while the edge of the tool cuts with the grain by the same motion of the hand. It is stated that the Hustler blades are manufactured from the finest

old-style hook and common chisel, although it can be used with chisel in place of Hustler if desired. One-half inch Hustler is supplied with this sizer; if necessary a smaller size may be used. Emphasis is given to the fact that all these tools are made of the finest quality steel, in the best manner, and are highly finished.

Magic Dish Drainer.

The F. F. Adams Company, Erie, Pa., are putting on the market the above-named article, the construction and use of which are clearly shown in the engravings here-



Fig. 6.—Shape Tenoner.

with given. After washing the dishes they are placed in the drainer and hot water poured freely on them, when they can be lifted from the sink and in a little while are ready for use or putting away. This drainer is referred to as a convenient receptacle for carrying the dishes from the kitchen to the closet, and is so arranged in compartments as to avoid the clashing together of large and small dishes, thus in large measure preventing breakage. The time consumed in washing dishes is also, by the use of this device, considerably reduced.

The magnetic concentrating plant at the Benson Mines, Little River, N. Y., is shut

The New York State Hardware Jobbers' Association.

This Association held its monthly meeting at the Fort Schuyler Club House, Utica, Thursday afternoon, April 23. Among

meeting of the association will be held in Troy.

Weed & Bagshaw, who recently engaged in the Hardware business at 100 Broadway, Newburgh, N. Y., are occupying a building which was built expressly for their use. It is 25 x 80 feet, two stories high, with a cellar under the whole. The building is well lighted and equipped with a Harrington Elevator. The firm intend to carry a full line of Builders' Hardware and Farm Machinery. The gentlemen comprising the firm have had considerable experience in the Hardware line, Mr. Weed having been for seven years in the employ of C. J. Lawson of Newburgh, and Mr. Bagshaw having

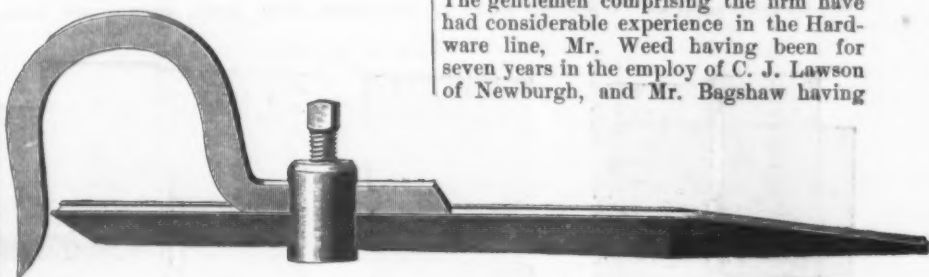


Fig. 7.—Combination Hustler and Sizer.

the houses represented were the following: McCarthy & Co., Syracuse; James W. Eager, Syracuse; Burnham, Black & Co., Syracuse; Kennedy, Spaulding & Co.,

been in the employ of Sargent & Co. of New York, and Miller Bros. of Minneapolis, Minn.

Lumber Tool Crate.

Champion Tool and Handle Works, Evart, Mich., give especial attention to packing their tools for shipping, and for this purpose use a patent crate as illustrated herewith. This crate holds a half dozen, and, they state, insures such protection to

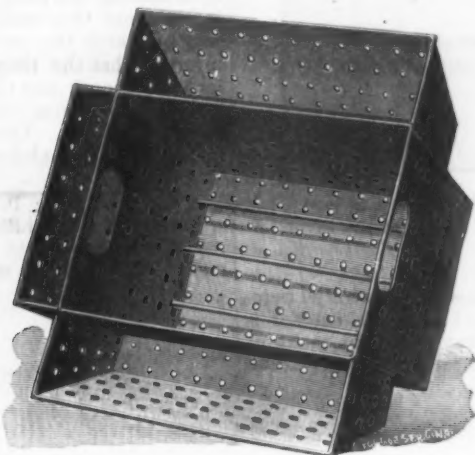


Fig. 1.—Magic Dish Drainer.

down for the present, to put in additional power and machinery to increase to output. The last 20 cars of ore shipped averaged 66.5 per cent. of iron and 0.03

Syracuse; Everson & Co., Syracuse; Walbridge & Co. and Weed & Co., Buffalo; Weaver, Palmer & Richmond, Rochester; Thomas Foster & Son, Utica; Wright,

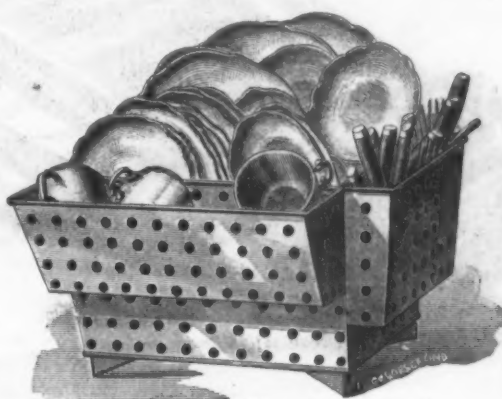
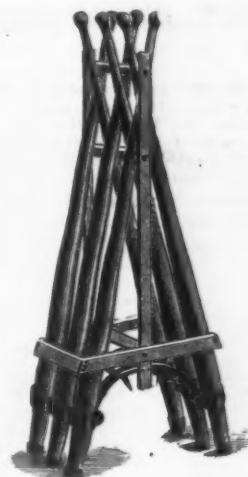


Fig. 2.—Drainer in Use.

phosphorus. W. E. Collins & Co. of Pittsburgh, who are the sales agents, report that the ore has proved very desirable as a puddle furnace fix.

Dana & Co., Utica, and Charles Millar & Son, Utica. After the routine business of the association had been disposed of the members enjoyed a banquet. The May

This country now has 167,741 miles of railroad, of which 6344 miles were added last year. This increase is slightly over the average.



Lumber Tool Crate.

the goods that they invariably reach the consumer in perfect condition, and also effect a saving in freight, as tools boxed or crated are classed under a lower tariff. The crate is referred to as an attractive and useful package and highly thought of by the trade.

Roche Grelhier, formerly Haytien Secretary of Agriculture under General Légitime, says the Government revenue now amounts to \$7,000,000 per annum, which is an increase. Port-au-Prince is building a market building of iron to cost \$200,000.

Improved Clapboard Holder, Siding Gauge and Scribe Hook.

Benjamin F. Mooney, Olean, N. Y., is introducing siding tools, as illustrated in Figs. 1, 2 and 3. The tools and the manner in which they are to be used are described by the manufacturer as follows:

These tools are rights and lefts. They fit the casings perfectly and have a scribe hook attached to mark the boards ready for sawing, thereby insuring a good joint whatever shape the casing may be. The post that carries the scribe hook is attached with a hinge so it fits all sizes of casings. A spring on the post answers three purposes. When the board is

carries the awl (using the set screws for a prop) and draw and set it for the next board. Put a nail in where the awl comes out, and by working this way the holders are always ready for use. Three are required for a set. The short one for splicing. They are scaled and can be set to any width board required.

Fig 2 gives an enlarged view of the tools, from which an excellent idea of their appearance may be had.

The Bieder Adjustable Grass Catcher.

Cleveland Novelty Company, Cleveland, Ohio, Ross & Fuller Association, 33 Chambers street, New York, agents, are intro-

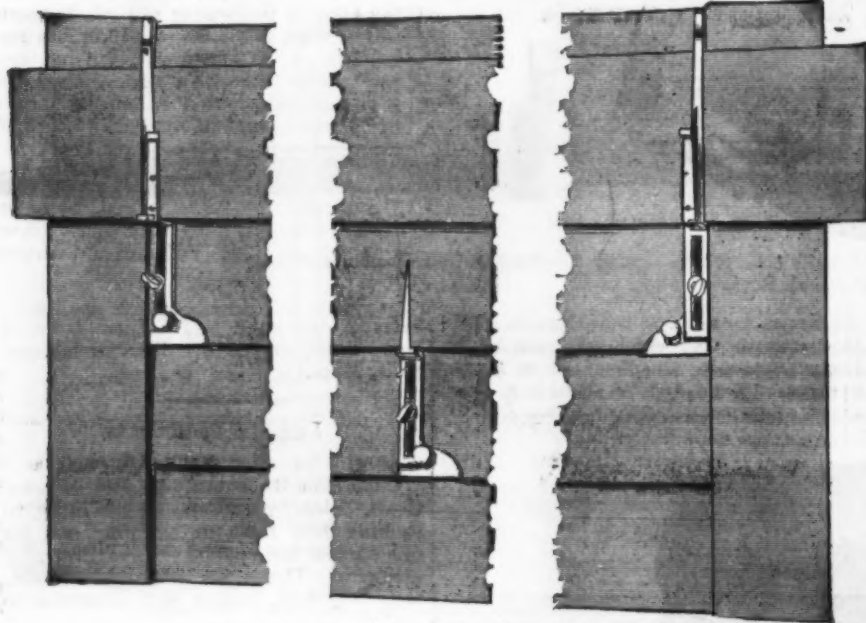


Fig. 1.—Improved Clapboard Holder, Siding Gauge and Scribe Hook.

taken out the post springs back to its proper position and leaves the scribe hook open at the top to receive the board after being sawed. When the board is placed in position for marking the spring presses the scribe hook firmly to the board and casings. There is no danger of being misplaced by the wind. The tools are

duced a grass catcher, as illustrated herewith. It is claimed that the catcher is adjustable, fitting any size and make of mower; that it is simple, durable and

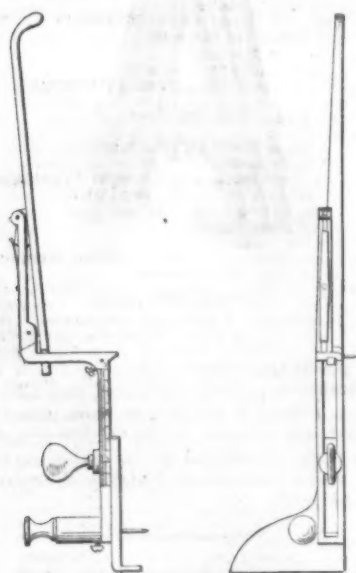


Fig. 2.—Siding Gauge and Scribe Hook.

put in place in less time than it takes to drive a nail. They are fastened to the building by a small brad that enters the casing and a small awl that is attached to the plunger that works through the socket at the bottom. This brad is placed so it leaves no holes, as it makes a starter for the nails. The board being ready for nailing, drive the nail in the second stud. Then catch the hammer over the plunger that

cheap; that it is light, and does not interfere with the working of the mower, and that it is easily applied and never out of order. They are described as being made of bright, heavy, fancy blue canvas, on a galvanized frame.

Success Bridle Bit.

William Van Arsdale, Racine, Wis., is introducing a bridle bit, as illustrated herewith. The bit has a steel bar, and is finished in a workmanlike manner. To make it a safe bit the lines are attached to the outer ring, when a very little pressure on the lines draw the rings toward each other, pressing the cheek nerves, causing



Success Bridle Bit.

the animal to yield, being unable to stand the pressure. The slacking of the lines gives the horse an easy straight bar bit, not worrying him, as there is but one bar in his mouth, and no chance of pinching the tongue. After an animal has been thoroughly broken of hard pulling the bit can be used as an ordinary straight bar bit by attaching the lines to the main rings. It is claimed that with this bit there is no way by which the animal's mouth can be injured; that the rings cannot be drawn into the mouth and that it does not have to be removed from the mouth to allow the animal to drink. These bits are finished in X C plate and nickel.

Peasley & Co., of Bloomington, Ill., are putting on the market an ingenious attachment for threshing machines called the



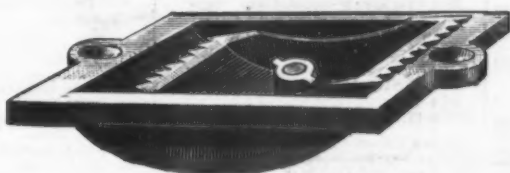
The Bieder Adjustable Grass Catcher.

Square Deal Measurer. The grain is run directly from the thresher into the hopper of the measurer, which is divided into two equal parts, one of which is empty while the other is being filled. When the apartment is full the rising grain forces

up a rod, which sets in operation the machine for moving on and dumping the full part, leaving the empty part in place to receive the grain. A tally is kept on the grain by a counter, which records each half bushel passed through. The grain can be discharged from either side or from both sides of the thresher at once. This machine is not a weight but a measurer, and is claimed to be accurate and reliable at all times.

The Crescent Bench Hook.

An illustration is herewith given of a new bench hook, which possesses special merit and is also very cheap. It is made



The Crescent Bench Hook.

of aluminum bronze, which is very strong and durable. The dog will not break like cast iron or steel when hit, and if the plane bit strikes it, it will not nick the bit like a steel dog. The dog has a thumb

by H. H. & C. L. Munger, 142 Lake street, Chicago.

Shedd's Blind Fast.

E. M. Richardson, Waltham, Mass., is offering the trade blind fasts adapted to brick buildings, or to windows with sub sills, as illustrated in Figs. 1, 2 and 3. The manufacturer claims that these fasts do not interfere with outside screens; that they are easily applied, and that they are perfect in their working, preventing the blind from sagging when open or shut.

Much interest is this week felt in Midland circles at the issue of the prospectus

and railway sidings, and the profit on the present works estimated at £17,000 per annum, which the valuer considers may be increased to £41,000 a year, at the low average rate of 10/ a ton, after the extensions have been completed. The existing works comprise three forges, fitted with steam hammers, and seven rolling mills, including two recently erected for cold rolling strip. There is also a basic-steel plant, with open-hearth furnace, and a chain and cable works. His lordship has entered upon a three years' contract with the British Admiralty for the supply of best cables for the large ironclads now in course of construction, and it is believed that this is only the commencement of a large future business in cables. It is considered that at a cost of £50,000 a steel mill can be laid down to turn out from 800 tons to 1000 tons a week of steel bars. It is understood that a fair number of the shares have been secured by a Midland capitalist.—*London Engineer*.

Contracts are being closed for an important plant for the Pacific Coast. It will include steel works, rod mill and wire nail factory.

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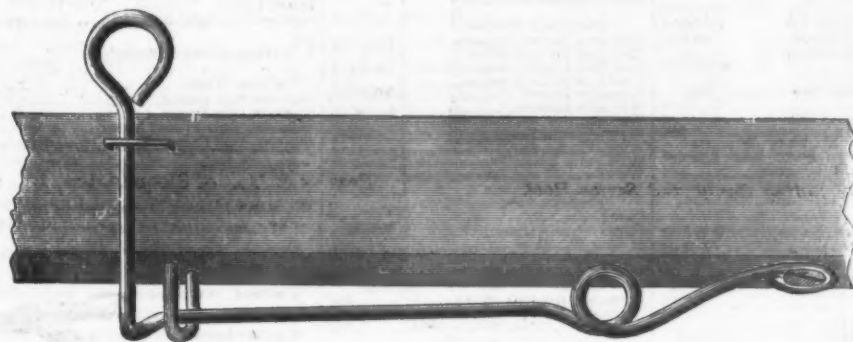


Fig. 1.—Brick Spring.

screw in the bottom, which works on a screw extending through the frame and playing in a slot $\frac{1}{4}$ inch long. The length of the slot enables the head of the dog to be adjusted to the thickness of the board

of the company which is in course of formation to take over the Earl of Dudley's famous Round Oak Iron and Steel Works. It is understood that the company have been registered with a capital of £262,000, in



Fig. 2.—Brick Sill Catch.

to be held. As the frame is sunk in the bench so that the top is flush with the surface, the dog will hold extremely thin boards. When the dog becomes dull it is sharpened by running a file across the top

20,000 ordinary shares at £10 each, and the remainder in founders' shares, entitled to half the surplus shares after 10 per cent. has been paid to ordinary shareholders. R. Dalglish, managing director of the



Fig. 3.—Brick Back Catch.

of the teeth, and the ends can also be reversed when one is worn out. This hook is handled in the East by H. O. Stratton, 112 Pearl street, Boston, and in the West

Round Oak Iron and Steel Works, Limited, and it is resolved to add a new steel mill to the old works, which have been valued at £190,000, inclusive of freehold land

CURRENT HARDWARE PRICES.

APRIL 29, 1891.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers' name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.

Domestic..... \$ doz \$5.00, 38¢
Excelsior..... \$ doz \$10.00, 50¢10¢25¢
Washburn's Self-Locking..... 30¢20¢10¢

Ammunition.—

Caps, Percussion, 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's..... 34¢35¢
E. B. Trimm'd Edge, 1-10's..... 40¢45¢
E. B. Grnd. Edge, Cent. Fire, 1-10's..... 46¢47¢
Musket Waterproof, 1-10's..... 50¢
G. D..... 28¢
A. B. Genuine Imported..... 45¢
Eley's E. B..... 54¢ @ 57¢
Eley's D Waterproof, Central Fire..... \$1.00

Cartridges—

Rim Fire Cartridges..... 50¢52¢
Rim Fire Military..... 15¢2¢
Cent. Fire, Pistol and Rifle..... 25¢52¢
Cent. Fire, Military and Sporting..... 15¢52¢
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., \$1.75..... 2¢
Blank Cartridges, 32 cal., \$3.50..... 2¢
Primed Shells and Bullets..... 15¢52¢
B. B. Caps, Round Ball, \$1.75..... 2¢
B. B. Caps, Con. Ball, Swgd., \$2.00..... 2¢

Primers—

Berdan Primers, \$1.00..... 2¢
B. L. Caps (for Sturtevant Shells) \$1.00..... 2¢
All other Primers, \$1.20..... 2¢

Shells—

First quality 4, 8, 10 and 12 gauge..... 25¢10¢25¢
First quality, 14, 16 and 20 gauge (\$10)..... 30¢10¢25¢
Star, Club, Rival and Climax brands..... 35¢10¢25¢
Selbold's Comb. Shot Shells..... 15¢25¢
Brass Shot Shells, 1st quality..... 60¢25¢
Brass Shot Shells, Club, Rival, Climax..... 65¢25¢

Shells Loaded—

Standard List, July 19, 1890..... 40¢10¢
Wads—Price per M.
U. M. C. & W. R. A.—B. E., 11 up..... 65¢
U. M. C. & W. R. A.—B. E., 9 & 10..... 82¢
U. M. C. & W. R. A.—B. E., 7..... 90¢
U. M. C. & W. R. A.—B. E., 5..... 110¢
U. M. C. & W. R. A.—P. E., 11 up..... 115¢
U. M. C. & W. R. A.—P. E., 9 & 10..... 120¢
U. M. C. & W. R. A.—P. E., 7..... 170¢
U. M. C. & W. R. A.—P. E., 5..... 180¢
Eley's B. E., 11 & 10..... 175¢
Eley's P. E., 11 & 10..... 250¢

Anvils—

Eagle Anvils, 100 lb..... 15¢15¢55¢
Peter Wright's..... 11¢11¢14¢
Armitage's Mouse Hole..... 10¢10¢11¢
Armitage's Mouse Hole, Extra..... 12¢12¢14¢
Trenton..... 10¢10¢11¢
Wilkinson's..... 10¢10¢11¢
Moore & Barnes Mfg. Co..... 85¢11¢

Anvil Vise and Drill—

Mitlers Falls Co., \$15.00..... 20¢
Cheney Anvil and Vise..... 25¢
Allen Anvil and Vise..... 40¢10¢
Star..... 45¢50¢

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglas Mfg. Co..... 70¢10¢
Wm. A. Ives & Co..... 70¢10¢
Humphreysville Mfg. Co..... 70¢10¢
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.)..... 70¢10¢
Rockford Bit Company..... 70¢10¢
Cook's, Douglas Mfg. Co..... 55¢
Cook's, S. H. Copper Co..... 50¢10¢
Ives' Circular Lip..... 60¢
Patent Solid Head..... 30¢
C. K. Jennings & Co., No. 10, extension lip..... 40¢
C. E. Jennings & Co., No. 30..... 60¢
C. E. Jennings & Co., Auger Bits, 3/4 set, 25¢ quaters, No. 6 & 8; No. 30, 35¢ 20¢
Lewis' Patent Single Twist..... 45¢
Russell Jennings' Augers and Bits..... 25¢10¢
Imitation Jennings' Bits..... 60¢60¢55¢
Snell's Jennings Pattern..... 60¢
Fughr's Black..... 20¢
Rockford, Jennings' Pattern..... 60¢
Car Bits..... 60¢60¢10¢
Car Bits, P. S. & W. Co..... 60¢10¢
Snell's Car Bits..... 60¢
L. Hommedieu Car Bits..... 15¢10¢
Forstner Pat. Auger Bits..... 20¢
Cincinnati Bell-Hangers' Bits..... 30¢10¢

Bit Stock Drills—

Morse Twist Drills..... 50¢10¢55¢
Standard..... 50¢10¢55¢
Cleveland..... 50¢10¢55¢
Syracuse, for metal..... 50¢10¢
Syracuse, for wood (wood list)..... 30¢30¢55¢
Williams' or Holt's, for metal..... 50¢10¢
Williams' or Holt's, for wood..... 40¢10¢
Cincinnati, for wood..... 30¢10¢
Cincinnati, for metal..... 45¢10¢

Expansive Bits—

Clark's small, \$18; large, \$26..... 35¢35¢55¢
Ives' No. 4, \$ doz \$1.10..... 40¢
Swan's..... 40¢
Steer's, No. 1, \$26; No. 2, \$22..... 35¢
Stearns's, No. 2, \$48..... 20¢

Gimlet Bits—

Common..... \$ gross \$2.75 @ \$3.25
Diamond..... \$ doz \$1.10..... 25¢10¢
Bee..... 25¢25¢55¢
Double Cut, Shepardsen's..... 45¢45¢10¢

Double Cut, Ct. Valley Mfg. Co..... 30¢10¢
Double Cut, Hartwell's, \$ gro..... 35¢25¢
Double Cut, Douglass..... 40¢10¢
Double Cut, Ives..... 50¢50¢10¢
Hollow Augers—
Ives..... 33¢4¢
French, Swift & Co..... 33¢4¢10¢
Douglass..... 33¢4¢10¢
Bonney's Adjustable, \$ doz \$48..... 40¢10¢
Stearns'..... 20¢10¢
Ives' Expansive, each \$4.50..... 50¢55¢
Universal Expansive, each \$4.50..... 20¢
Wood's..... 35¢25¢10¢
Cincinnati Adjustable..... 25¢10¢
Cincinnati Standard..... 25¢10¢

Ship Augers and Bits—
L. Hommedieu's..... 15¢10¢15¢10¢55¢
Watrous'..... 15¢10¢15¢10¢10¢
Snell's..... 15¢10¢15¢10¢55¢
Snell's Ship Auger Pat'n Car Bits..... 15¢10¢15¢10¢55¢

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—
Awls, Sewing, Common..... \$ gr \$1.70, 35¢
Awls, Should. Peg..... \$ gr \$2.45, 40¢40¢10¢
Awls, Pat. Peg..... \$ gr 68¢..... 40¢40¢10¢
Awls, Shouldered Brad, 2-70 gr..... 35¢
Awls, Handled Brad..... \$7.50 gr..... 45¢
Awls, Handled Scratch..... \$ gr \$7.50, 35¢10¢
Awls, Socket Scratch, \$ doz, \$1.50, 25¢30¢

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands..... \$7.00 @ \$7.50
First qual., other brands..... 6.82¢ @
Second quality..... 6.00 6.5¢
Axe Grease—See Grease, Axe.

Axles—

No. 1, 4¢ @ 5¢, No. 2, 5¢ @ 6¢
Nos. 7 to 14..... 55¢55¢
Nos. 15 to 18..... 47¢55¢
Nos. 19 to 22..... 70¢
Concord Axles, loose collar..... 5¢6¢
Concord Axles, solid collar..... 6¢7¢
National Tubular Self-Oiling..... 35¢45¢35¢55¢

Bag Holders—See Holders, Bag.

Balances—

Spring Balances..... 40¢
No. 2000 30 80
Chatillon, \$ doz..... \$0.20 0.95 1.75 net
Chatillon Straight Balances..... 40¢
Chatillon Circular Balances..... 60¢10¢

Bars—

Crow—
Cast Steel..... \$ 3 3/4¢
Iron, Steel Points..... \$ 5 3/4¢

Basins, Wash—

Standard Fiberglass, No. 1, 10 1/2-inch, \$2; 12-inch, \$2.25; 13 1/2-inch, \$2.75; 15-inch, \$3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82..... 50¢10¢
Chatillon's No. 1..... 40¢
Chatillon's No. 2..... 50¢
Custer's..... 35¢45¢

Beaters—

Egg—
Dover..... \$ doz \$1.50
Duplex (Standard Co.)..... \$ doz \$1.25
Rival (Standard Co.)..... \$ doz \$1.00
Duplex Extra Heavy (Standard Co.)..... \$ doz \$2.50

Bryant's..... \$ gro \$14.00
Double (H. & R. Mfg. Co.), \$ gro. No. 0, \$12.00; No. 1, \$15.00; No. 2, \$30.00
Easy (H. & R. Mfg. Co.)..... \$ gro \$12.00
Triple (H. & R. Mfg. Co.)..... \$ gro \$16.50
Spiral..... \$ gro \$25 @ 4.50
Improved Acme (H. & R. Mfg. Co.)..... \$ gro \$9.00

Paine, Diehl & Co.'s..... \$ gro \$24.00
Silver & Co..... \$ doz \$5.50

Culinary—

Keystone, P. D. & C., Each, No. 1, \$1; No. 2, \$2..... 20¢

Bells—

Common Wrought..... 60¢10¢
Western..... 60¢10¢
Western, Sargent's list..... 70¢10¢
Kentucky, "Star"..... 80¢10¢
Kentucky, Sargent's list..... 70¢10¢
Dodge, Genuine Kentucky..... 70¢70¢10¢
Texas Star..... 50¢10¢50¢10¢55¢
Call..... 40¢40¢55¢
Farm Bells..... \$ 3 3/4¢3 1/2¢
Steel Alloy Church and School Bells..... 40¢

Door—

Gong, Abbe's..... 33¢41¢10¢
Gong, Yankee..... 45¢10¢
Gong, Barton's..... 45¢10¢50¢
Crank, Taylor's..... 25¢10¢
Crank, Brooks'..... 50¢10¢25¢
Crank, Cone's..... 20¢10¢
Crank, Connel's..... 20¢10¢
Lever, Sargent's..... 60¢10¢
Lever, Taylor's Bronzed or Plated..... net
Lever, Taylor's Japanese..... 25¢10¢
Lever, R. E. M. Co.'s..... 50¢10¢25¢
Farm Bells..... \$ 3 3/4¢3 1/2¢
Pull, Western..... 25¢10¢
Electric.....
Wollensak's..... 20¢
Bigelow & Dowse..... 20¢
Taylor's..... 20¢

Hand—

Light Brass..... 75¢10¢
Extra Heavy..... 55¢10¢
White Metal..... 60¢10¢10¢
Silver Chime..... 35¢10¢
Globe Cone's Patent..... 25¢10¢35¢

Bellows—

Blacksmiths'..... 60¢5¢65¢
Molders'..... 40¢40¢10¢
Hand Bellows..... 40¢10¢50¢

Belting, Rubber—

Common Standard..... 70¢70¢55¢
Standard..... 60¢10¢10¢70¢
Extra..... 50¢10¢60¢
N. Y. B. & P. Co., Carbon..... 60¢
N. Y. B. & P. Co., Diamond..... 50¢
N. Y. B. & P. Co., Para..... 40¢

Bench Stops—See Stops, Bench.

Benders, Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..... 15¢
Detroit Perfected Tire Bender..... 15¢

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Ordinary Tackle, List May 20, 1890..... 60¢10¢10¢70¢
Cleveland Block Co., Mal. Iron..... 50¢
Moore's Novelty, Mal. Iron..... 50¢
Surre Grip Steel Tackle Blocks..... 25¢

Boards, Stove—

Wood Lined "Crystal"..... 50¢
"Embossed"..... 55¢
"Oxidized"..... 55¢
Paper Lined Zinc..... 45¢
"Crystal"..... 55¢
"Embossed"..... 55¢
"Oxidized"..... 45¢

Boils—

Carriage, Machine, &c.—

Com. list June 10, '84..... 75¢10¢25¢
Genuine Eagle, list Oct. '84..... 75¢10¢80¢
Phillips, list Oct. 7, '84..... 80¢80¢10¢
R. B. & W., old list..... 70¢
Machine, list Jan. 1, 1890..... 75¢10¢75¢10¢55¢
Bolt Ends, list Jan. 1, 1890..... 75¢10¢75¢10¢55¢

Door and Shutter—

Cast Iron Barrel, Square, &c..... 70¢70¢10¢
Cast Iron Shutter Bolts..... 65¢10¢
Ives' Patent Door Bolts..... 60¢
Wrought Barrel..... 70¢70¢10¢
Wrought Square..... 70¢70¢10¢
Wrt Shutter, all Iron, Stanley's..... 40¢10¢
Wrt Shutter, Brass Knob..... 40¢10¢
Wrt Shutter, Sargent's list..... 50¢10¢
Wrt Sunk Flush, Stanley's list..... 50¢10¢
Wrt Sunk Flush, Com'n..... 55¢10¢

Stove and Plow—

Stove..... 60¢
Plow..... 60¢25¢
R. B. & W., Plow..... 65¢

Common, list Feb. 23, '83..... 65¢
Port Chester Bolt and Nut Company:
Empire, list Feb. 23, '83..... 65¢
Keystone, Philadel., list Oct. '84..... 80¢
Norway, Phil., list Oct. '84..... 75¢
American Screw Company:
Norway, Phil., list Oct. 16, '84..... 75¢
Eagle, Phil., list Oct. 16, '84..... 80¢
Philadel., list Oct. 16, '84..... 80¢
Bay State, list Feb. 23, '83..... 65¢
R. B. & W., Philadel., list Oct. 16, '84..... 80¢

Borers, Tap.

Common and Rind..... 20¢10¢
Ives' Tap Borers..... 35¢25¢
Enterprise Mfg. Co..... 30¢10¢30¢
Clark's..... 35¢35¢55¢

Borax—

\$ 9 1/4 @ 10 1/4¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Bowes, Wagon.

Per 2..... 25¢

Braces—

American Bit Brace Co.:
Nos. 10, 12, 20..... 60¢10¢
Nos. 11, 21, 24, 27..... 70¢10¢
Nos. 22, 23, 25..... 60¢10¢55¢
Nos. 13, 26, 28, 37..... 70¢10¢25¢
Br. Braces, net..... \$1.12 to \$1.55¢

Amidon's

Barker's Imp'd Platin..... 75¢10¢80¢
Barker's Imp. Nickel..... 65¢10¢70¢
Ratchet..... 75¢10¢80¢
Eclipse Ratchet..... 60¢
Globe Jawed..... 40¢40¢10¢
Corner Ratchet..... 40¢40¢10¢
Universal, 8 in., \$2.10 10 in..... \$2.25
Buffalo Ball..... \$1.10 @ \$1.15

Barber's

Nos. 10 to 16..... 50¢
Nos. 30 to 33..... 50¢
Nos. 40 to 63..... 50¢10¢
Sexton's:
Barker's Imp. Polished..... 75¢10¢80¢
Barker's Imp. Nickel..... 65¢10¢70¢
Ratchet, Polished..... 50¢10¢60¢
Ratchet, Nickel..... 40¢10¢50¢
Buffalo Ball..... net, \$1.10 @ \$1.15

Bartholomew's

Nos. 25, 27 and 30..... 50¢10¢60¢55¢
Nos. 117, 118, 119..... 70¢70¢55¢
Common Ball, American..... \$1.00 @ \$1.10
Fray's Genuine Spotted's, 50¢55¢50¢10¢
Fray's No. 70 to 120, 81 to 123, 207 to 414..... 50¢10¢

Ives' New Haven Novelty..... 70¢70¢55¢

New Haven Ratchet..... 60¢55¢60¢10¢
Barber Ratchet..... 60¢55¢60¢10¢
Barbers..... 60¢55¢
Spofford..... 60¢55¢60¢10¢
Oswood's Ratchet..... 40¢10¢50¢
P. S. & W. Co., Peck's Patent..... 60¢

Brackets—

Shelf plain, Sargent list, 55¢10¢55¢
Shelf, fancy, Sargent's list, 60¢10¢60¢
Reading, plain..... 50¢10¢60¢10¢55¢
Reading, Rosette..... 60¢10¢60¢10¢10¢

Bright Wire Goods—See Wire.

Broilers—

Hens' Self-Inch..... 9 10 9x11
Basting, 1 Per doz..... \$4.50 5.50 6.50
New Haven..... 50¢
Wire Goods Co..... 65¢10¢

Buckets, Well.

Galvanized—

Hill's..... \$ doz, 12 qt, \$4.25; 14 qt, \$5.25
Iron Clad..... \$ doz, 14 qt, \$4.25 @ \$4.50
Helwig's Flat Iron Band..... \$3.75
Helwig's Wired Top..... \$ doz \$4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—

Brass—
Wrought Brass..... 75¢10¢80¢
Cast Brass, Tiebout's..... 60¢
Cast Brass, Corbin's, Fast..... 35¢45¢10¢
Cast Brass, Loose Joint..... 35¢45¢10¢

Cast Iron—

Fast Joint, Narrow..... 50¢10¢55¢60¢
Fast Joint, Broad..... 50¢10¢60¢
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns.....
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned.....
Loose Pin, Acorns, Japanned, Plated Tips.....

Wrought Steel—

Fast Joint, Narrow.....
Fast Joint, L. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Inside Blind, Light.....
Loose Pin.....
Bronzed Wrought Butts.....

Callipers—See Compasses.

Calks, Tee—

Gautier, One Prong, Blunt..... 5¢6¢
Burke's, One Prong, Blunt..... 5¢6¢
Burke's, Two Prong, Blunt..... 7¢8¢
Burke's, One Prong, Sharp..... 5¢6¢7¢

Can Openers—See Openers, Can.

Cards—List January 28, 1891.

Watson's Cotton, Wool, Horse and File..... 25¢

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—See Ammunition.

Casters—

Bed.....
Plate.....
Shallow Socket.....
Deep Socket.....
Yale Casters, list May, 1894..... 20¢10¢40¢
Yale, Gem..... 60¢60¢55¢
Martin's Patent (Phoenix)..... 45¢10¢50¢
Payson's Anti-Friction..... 60¢60¢10¢
Giant Truck Casters..... 30¢
Stationary Truck Casters..... 50¢10¢
Socket Truck Casters..... 50¢

Cattle Leaders—See Leaders, Cattle.

Cement.

Victor Elastic..... 5 lb pails \$ 5 1/2

Chain—

Trace, Wagon and Fancy Chains, List revised April 31, 1890..... 50¢
10¢60¢

American Coll, in cask lots, 2-16 5-16 7-16 8-16 9-16 10-16 11-16 12-16 13-16 14-16 15-16 16-16 17-16 18-16 19-16 20-16 21-16 22-16 23-16 24-16 25-16 26-16 27-16 28-16 29-16 30-16 31-16 32-16 33-16 34-16 35-16 36-16 37-16 38-16 39-16 40-16 41-16 42-16 43-16 44-16 45-16

Chucks—

Beach Pat.	each, \$5.00	30%
Morse's Adjustable, each, \$7.00, 20		20
Danbury, each, \$6.00, 20		20
Syracuse, Bal. Pat.		25%
Graham Patent.		33%
Skinner's Patent Chucks.		33%
Combination Lathe Chucks.		33%
Universal Lathe Chucks.		40%
Independent Lathe Chucks.		40%
Drill Chucks.		15%
Union Mfg. Co.,		
Victor.	\$8.50, 25%	
Combination.		40%
Universal.		40%
Independent.		40%

Churns.

Tiffin Union, each, 5 gal. \$3.25; 7 gal., \$3.75; 10 gal. \$4.25.	
McDonald Star Barrel Churn, each, 6 gal., \$2.00; 10 gal., \$2.75; 15 gal., \$3.50; 20 gal. \$3.25.	

Clamps—

R. I. Tool Co.'s Wrought Iron.	25%
Adjustable, Cincinnati.	15%
Adjustable, Hammers.	15%
Adjustable, Stearn's.	30%
Stearns' Adjustable Cabinet and Corner Cabinet, Sargent's.	30%
Carriage Makers', Sargent's.	70%
Carriage Makers', P. S. & W. Co.	40%
Eberhard Mfg. Co.	40%
Parallel, C. H. Bealy & Co.	25%
Warner's.	40%
Saw Clamps, see Vices, Saw Filers.	
Carpenters', Cincinnati.	25%

Cleavers.

Butchers'.	
Bradley's.	25%
L. & J. White.	20%
Beatty's.	40%
New Haven Edge Tool Co.	40%
P. S. & W. Co.	35%
Poster Bros.	30%
Schultz, Lohoff & Co.	40%

Clips—

Norway, Axle, 1/4 & 5-16.	55%
2nd grade Norway Axle, 1/4 & 5-16.	65%
Superior Axle Clips.	60%
Norway Spring Bar Clips, 5-16.	60%
Wrought-Iron Felice Clips.	55%
Steel Felice Clips.	55%
Baker Axle Clips.	55%

Cloth and Netting, Wire—See Wire, &c.**Cockeyes.**

Cocks, Brass.	50%
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Cocks, Brass.

Hardware list.	50%
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Coffee Mills—See Mills, Coffee.**Collars, Dog, &c.**

Medford Fanny Goods Co.	40%
Embossed, Gilt, Pope & Steven's list.	30%
Brass, Pope & Steven's list.	40%
Chapman Mfg. Company.	40%

Combs, Curry.

Fitch's.	50%
Rubber, per doz \$10.00.	30%
Perfect.	30%

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers, 70 & 104	
Bemis & Call Co.'s	
Dividers.	60%
Compasses & Calipers.	50%
Wing and Inside or Outside.	50%
Double.	60%
(Call's Pat. Inside).	50%
Excelsior.	50%
J. Stevens & Co.'s.	25%
Starrett's	
Spring Calipers and Dividers.	25%
Lock Calipers and Dividers.	25%
Combination Dividers.	25%

Coopers' Tools—See Tools, Coopers'.**Cord—**

Sash.	
Common.	10%
Patent, good quality.	13%
White Cotton Braided, fair.	26%
Common Russia Sash.	13%
Patent.	13%
Cable Laid Italian Sash.	22%
Indian Cable Laid.	13%
Silver Lake—	
A Quality, White, 50%.	10%
A Quality, Drab, 50%.	10%
B Quality, White, 50%.	25%
B Quality, Drab, 50%.	25%
C Quality, White only.	25%
Sylvan Spring, Extra Braided, White, 3/4	
Sylvan Spring, Extra Braided, Drab, 3/4	
Semper Idem, Braided, White.	30%
Egyptian, India Hemp, Braided.	25%
Samson—	
Braided, White Cotton, 50%.	30%
Braided, Drab Cotton, 50%.	30%
Braided, Italian Hemp, 50%.	30%
Braided, Linen, 80%.	30%
Tate & Co. Braided Wire, #100 ft.	54%

Wire Picture.

Braided or Twisted.	75%
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Corkscrews—See Screws, Cork.**Corn Knives and Cutters—See Knives, Corn.****Crackers, Nut—**

Table (H. & B. Mfg. Co.).	40%
Blake's Pattern.	20%
Turner & Seymour Mfg. Co.	50%

Cradles—

Grain.	50%
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Crayons.

White Crayons, # gr. 12 & 12 1/2.	10%
D. M. Stewart Mfg. Co., Metal Work—	
ers, # gr. \$2.50.	25%
D. M. Stewart Mfg. Co., Rolling Mill.	
# gr. \$2.50.	25%
See also Chalk.	

Crew Bars—See Bars, Crew.**Curry Combs—See Combs, Curry.****Curtain Pins—See Pins, Curtain.****Cutters—**

Neat.	
Dixon's # dos.	40%
Nos.	14.00 17.00 19.00 20.00

Woodruff's # dos.	40%
Nos.	100 150
40s Pattern # dos.	70%
Nos.	11 12 13
American.	30%
Nos.	2 3 4 5
Each.	\$5 \$7 \$10 \$25 \$50 \$100
Enterprise.	30%
Nos.	10 12 22 33 42
Each.	\$3 \$2.50 \$4 \$6 \$15
Great American Meat Cutter.	30%
Nos.	112 116 118 120 122
Each.	\$2.00 \$2.75 \$3.00 \$2.50 \$4.00
Miles' Challenge # dos.	50%
Nos.	1 2
Each.	\$22.00 \$30.00 \$40.00
Home No. 1.	\$20.00 \$30.00 \$40.00
Draw Cut, each:	
Nos.	6 8 10
Each.	\$50 \$75 \$80 \$225
Great American.	30%
Beef Shavers (Enterprise).	30%
Little Giant.	50%
Chadborn's Smoked Beef Cutter, # dos	
.....	\$60.00

Tobacco.	
Champion.	20%
Wood Bottom.	20%
All Iron.	20%
Nashua Lock Co.'s.	50%
Wilson's.	55%
Sargent's.	55%
Acme.	40%

Washer.	
Smith's Pat.	20%
Johnson's.	20%
Penny's.	20%
Appleton's.	20%
Booney's.	20%
Cincinnati.	20%

Home No. 1.	\$20.00 \$30.00 \$40.00
Draw Cut, each:	
Nos.	6 8 10
Each.	\$50 \$75 \$80 \$225
Great American.	30%
Beef Shavers (Enterprise).	30%
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Chadborn's Smoked Beef Cutter, # dos	
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Wilson's.	55%
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Acme.	40%

Washer.	
Smith's Pat.	20%
Johnson's.	20%
Penny's.	20%
Appleton's.	20%
Booney's.	20%
Cincinnati.	20%

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Penny's.	20%
Appleton's.	20%
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Cincinnati.	20%

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Penny's.	20%
Appleton's.	20%
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Cincinnati.	20%

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Washer.	
Smith's Pat.	20%
Johnson's.	20%
Penny's.	20%
Appleton's.	20%
Booney's.	20%
Cincinnati.	20%

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Johnson's.	20%
Penny's.	20%
Appleton's.	20%
Booney's.	20%
Cincinnati.	20%

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Wilson's.	55%
Sargent's.	55%
Acme.	40%

Washer.	
Smith's Pat.	20%
Johnson's.	20%
Penny's.	20%
Appleton's.	20%
Booney's.	20%
Cincinnati.	20%

Home No. 1.	\$20.00 \$30.00 \$40.00
Draw Cut, each:	
Nos.	6 8 10
Each.	\$50 \$75 \$80 \$225
Great American.	30%
Beef Shavers (Enterprise).	30%
Little Giant.	50%
Chadborn's Smoked Beef Cutter, # dos	
.....	\$60.00

Screw-Drive Hts, Part's.	# gr \$6.25
Fray's Hol. Hds. Seta. No. 3.	\$12.00
.....	25%
P. D. & Co.'s all Steel.	50%
Cincinnati.	25%
Brace Screw Drivers.	25%
Buck Bros' Screw-Drive Bits.	25%

Egg Beaters.—See Beaters, Egg.**Egg Poachers.—See Poachers, Egg.****Electric Bell Sets.—See Bells, Elec-****tric.****Emery.—No. 4 to No. 54 to Flour, CF**

40 gr.	150 gr.	F. FF.
1/2 keg, # 4.	5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Enameled and Tinned Ware—See Ware, Hollow.**Escutcheon Pins—See Pins, Escutcheon.****Escutcheons.****Door Lock.—Same dis as Door Locks.****Brass Thread.****Wood.****Expanded Metal.****List No. 5.****Lathing.**

Boggin's Latches..... 40c 30c 35c
 Bronze Iron Drop Latches..... 70c 70c net
 Jap'd Store Door Handles..... 1.02
 Plate, 1.10; no Plate, 1.05 net
 Barn Door, 70c 1.40 1.05
 Chest and Lifting..... 70c

Wood—

Saw and Plane..... 40c 10c 40c 10c
 Hammer, Hatchet, Axe, Sledge, &c., 40c
 Brad Awl..... 25c
 Hickory Firmer Chisel, ass'd., 45c
 Hickory Firmer Chisel, large, 50c
 Apple Firmer Chisel, ass'd., 45c
 Apple Firmer Chisel, large, 50c
 Socket Firmer Chisel, ass'd., 45c
 Socket Framing Chisel, ass'd., 50c
 I. S. Smith & Co.'s Fat File..... 50c
 File, assorted..... 25c 75c
 Auger, assorted..... 50c
 Auger, large..... 70c
 Fat Auger, 10c 10c
 Fat Auger, Douglas..... 1.25
 Fat Auger, Swan's..... 1.00
 Hoe, Rake, Shovel, &c..... 50c 10c

Hangers—

Barn Door, old patterns..... 60c 10c 10c 70c
 Barn Door, New England..... 60c 10c 10c 70c
 Samson Steel..... 55c
 Orleans Steel..... 55c
 Hamilton Wrought Wood Track..... 55c
 U. S. Wood Track..... 55c
 Champion..... 60c 10c
 Rider and Wooster, Medina Mfg. Co.'s
 List..... 70c
 Climax Anti-Friction..... 55c
 Climax Anti-Friction for Wood Tracks..... 55c
 Zenith for Wood Track..... 55c
 Reed's Steel Arm..... 50c
 Challenge, Barn Door..... 50c
 Sterling..... 50c 50c 10c
 Victor, No. 1, 1.15.00; No. 2, 1.15.00;
 3, 1.15.00..... 50c 25c
 Chertiers..... 50c 10c 60c
 Kidder's..... 50c 10c 60c
 The Best..... 60c 10c
 Best Anti-Friction..... 60c 10c
 Duplex (Wood Track)..... 60c 10c 55c
 Terry's Pat., 70c pr. 4 in, 1.10.00; 5 in,
 1.12.00..... 60c 10c
 Terry's Steel Anti-Friction Leader..... 50c 10c
 Terry's Steel Anti-Friction Ideal..... 50c 10c
 Cronk's Patent, Steel Covered..... 50c 55c
 Wood Track Iron Clad, 7 ft. 10c..... 50c
 Carrier Steel Anti-Friction..... 50c 10c
 Architect, 70c set 30.00..... 50c
 Eclipse..... 50c 10c
 Fell, 70c set 30.00..... 50c 10c
 Richards..... 50c 10c 60c
 Lane's Standard..... 50c 50c 55c
 Lane's New Standard..... 50c 50c 55c
 Ball Bearing Door Hanger..... 50c 10c 25c
 Warner's Pat..... 50c 10c 20c 10c 10c
 Stearns' Anti-Friction..... 50c 10c 20c 10c 10c
 Stearns' Challenge..... 50c 10c 20c 10c 10c
 Paulinos..... 40c 40c 55c
 American, 70c set 30.00..... 50c 10c
 Rider & Wooster, No. 1, 50c 45c; No. 2,
 75c..... 40c
 Paragon, Nos. 1, 2 and 3..... 40c 10c
 Cincinnati..... 25c 10c
 Paragon, Nos. 5, 5 1/2, 7 and 8..... 20c 10c
 Crescent..... 60c 10c 55c
 Nickel Cast Iron..... 50c
 Nickel, Malleable Iron and Steel..... 40c
 Scranton Anti-Friction Single Strap..... 40c
 Wild West, 4 in. Wheel, 1.15.00; 5 in.,
 Wheel, 1.21.00..... 45c
 Star..... 40c 10c 40c 55c
 May..... 50c 10c 55c 40c 10c
 Barry, 50c 10c..... 40c 10c
 Interstate..... 50c
 Magic..... 45c

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
 Blood's.....
 Hunt's.....
 Hurd's.....
 Mann's.....
 Peck's.....
 Underhill's..... 40 & 10
 Buffalo Hammer Co.....
 Fayette R. Plumb..... 50c 55c
 C. Hammond & Son.....
 Sargent & Co.....
 P. S. & W. Co.....
 Ten Eyck Edge Tool Co.....
 Collins..... 10c
 Schulte, Lohoff & Co..... 50c 50c 55c

Hay and Straw Knives—See

Knives.

Hinges—

Blind Hinges—
 Parker..... 75c 25c
 Palmer..... 50c 55c 10c
 Seymour..... 70c 25c
 Huffer..... 50c
 Clark's, Nos. 1, 3, 5, 40 and 50..... 75c 10c 55c 20c
 Clark's Mortise Gravity..... 60c
 Sargent's, Nos. 1, 3, 5, 11, 13..... 75c 10c 55c 10c 55c
 Sargent's, No. 12..... 75c 10c 10c
 Reading's Gravity..... 75c 10c 75c 10c 55c
 Shepard's..... 75c 10c
 Notches..... 75c 10c
 Niagara..... 80c
 Buffalo..... 80c
 Clark's Genuine Pattern..... 80c
 O. S. Lull & Porter..... 75c 10c
 Acme, Lull & Porter..... 75c
 Queen City Reversible..... 75c 10c 55c 75c
 Clark's Lull & Porter, Nos. 1, 2, 3,
 2, 2 1/2, 3..... 75c 10c 55c 75c
 Clark's Automatic Blind Hinges, No. 2,
 for Wood, 1.00.00; No. 3, for Brick,
 1.11.00..... 10c

Gate Hinges—

Western..... 70c 40.00, 50c
 N. E..... 70c 40.00, 55c
 N. E. Reversible..... 70c 40.00, 55c 10c
 Clark's, Nos. 1, 2, 3..... 60c 10c 55c
 V. Y. State..... 70c 40.00, 55c 10c
 Automatic..... 70c 40.00, 55c
 Common Sense..... 45c 10c
 Seymour's..... 60c 10c 55c
 Head's Latch and Hinges..... 70c 12.00, 50c

Spring Hinges—

Union Spring and Blank Butts..... 40c
 Mrs. Post's Spring Hinge Co.'s list, March
 1890..... 20c

Acme..... 80c
 J. S..... 25c 10c
 Empire and Crown..... 20c
 Hero and Monarch..... 55c
 American, Gem, and Star..... 20c
 Oxford..... 20c
 Barker's Double Acting..... 25c
 Union Mfg. Co..... 25c
 Bommer's..... 80c
 Buckman's..... 15c 20c
 Chicago..... 10c
 Wiles..... 10c
 Devore's..... 40c
 Rex..... 40c
 Royal..... 60c
 Reliable..... 60c
 Champion..... 60c
 Bardsley's Patent..... 40c
 Stearns's..... 50c 10c
 Niagara, Holdback pattern, per
 gross..... 1.10.00

Wrought Iron Hinges

List February 14, 1891.
 Strap and T..... 50c 10c
 Corrugated Strap and T..... 50c 10c
 Screw Hook and..... 60c 12 in, 70c 10c
 Strap..... 22 to 36 in, 70c 10c
 Rolled Blind Hinges, Nos. 22 and 24..... 50c 10c
 Rolled Blind Hinges, Nos. 222 and 234..... 55c 10c
 Rolled Plate..... 70c 10c
 Rolled Raised..... 70c 10c
 Plate Hinges, 8, 10 and 12 in, 70c 10c
 "Providence" over 12 in, 70c 10c

Hoos—

Eye—
 D. & H. Scovill..... 20c
 Lane's Crescent Planter Pattern..... 45c 55c
 Lane's Razor Blade, Scovill Pattern..... 30c
 Maynard, S. & O. Pat..... 45c 55c
 Sandusky Tool Co., S. & O. Pat..... 60c 10c 55c
 Am. Axe and Tool Co., S. & O. Pat..... 60c 10c 55c
 Chattanooga Tool Co., S. & O. Pat..... 60c 10c 55c
 Grub..... 60c 10c

Handled—

Garden, Mortar, &c..... 65c 55c 65c 10c
 Planter's, Cotton &c..... 65c 55c 65c 10c
 Warren Hoe..... 60c
 Magic..... 70c 40.00

Hog Rings and Hangers—See

Rings and Hangers.

Hoisting Apparatus—See

Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.
 Sprengle's Pat..... 70c 1.15.00
 Bit.
 Extension,
 Barber's, 70c 1.15.00..... 40c 40c 10c
 Ives, 70c 1.15.00..... 60c 55c 60c 10c
 Diagonal..... 70c 1.15.00, 40c
 Angular..... 70c 1.15.00, 40c 55c
 File and Tool—
 Bals Pat..... 70c 1.15.00, 25c
 Nicholson File Holders..... 30c
 Dick's Tool Holder..... 20c

Hooks—

Cast Iron—
 Bird Cage, Sargent's list..... 60c 10c 10c
 Bird Cage, Reading list..... 60c 10c 10c
 Clothes Line, Sargent's list..... 60c 10c 10c
 Clothes Line, Reading list..... 60c 10c 10c
 Ceiling Sargent's list..... 60c 10c 10c
 Harness, Reading list..... 55c 10c 10c
 Coat and Hat, Sargent's list..... 55c 10c 10c
 Coat and Hat, Reading..... 50c 10c 50c 10c 10c
 Wrought Iron—
 Cotton..... 70c 1.15.00
 Cotton Pat. (N.Y. Mallet & Handle Wks.)..... 30c
 Tassel and Picture (T. & S. Mfg. Co.)..... 30c
 Wrought Staples, Hooks, &c.....
 See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April,
 1886..... 60c
 Wire Coat and Hat, Miles', list April,
 1886..... 50c
 Indestructible Coat and Hat..... 45c
 Wire Coat and Hat, Standard..... 60c
 Handy Hat and Coat..... 60c 10c
 Steady Ceiling Hooks..... 80c 10c 10c
 Belt..... 80c 10c 10c
 Atlas Coat and Hat..... 60c

Miscellaneous.

Grass, No. 2, 1.20.00; No. 3, 1.25.00; No. 4, 1.25.00
 Nolin's Grass..... 70c 25c
 Bush..... 55c 80c
 Whitetree—Patent..... 55c
 Hooks and Eyes—Malleable Iron..... 70c 70c 10c
 Hooks and Eyes—Brass..... 60c 10c 10c
 Fish Hooks, American..... 60c
 Bench Hooks..... See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition..... 75c 75c 55c
 Standard..... 60c 10c 55c 60c 10c 10c
 Extra..... 60c 10c 60c
 N. Y. B. & P. Co., Para..... 25c 55c
 N. Y. B. & P. Co., Extra..... 40c 40c 55c
 N. Y. B. & P. Co., Dundee..... 40c 10c 60c

Husk—

Blair's Adjustable..... 70c 70c 10c
 Blair's Adjustable Clipper..... 70c 7.00
 Hubbard's Solid Steel..... 70c 4.50

Indurated Fiber-Ware—See

Ware, Indurated Fiber—

Irons.

Sad—
 From 4 to 10, at factory..... 100 lb
 Self-Heating..... 25c 30c 25c 40
 Self-Heating, Tailors..... 70c 1.15.00 net
 Mrs. Post's Irons..... 50c 55c
 Enterprise Star Irons..... 50c 55c
 XX Cold Handle Sad Irons..... 50c 55c

Ideal Irons new list..... 50c 10c 50c 10c 10c
 Salamander, Irons..... 25c
 H. B. Sad Irons..... 30c 35c
 Combined Fluter and Sad Iron, 70c
 1.15.00.00. Self-Fluter 70c 1.15.00.00
 Fox Reversible, Self-Fluter 70c 1.15.00.00
 Chinese Laundry (N.E. Butt Co.) 80c, 15c
 New England..... 60c, 15c
 Mahony's Troy Pol. Irons..... 25c
 Sensible, list Jan. 91..... 50c 10c 55c
 Sensible Tailor's Irons..... 35c 15c
 National Self-Heating..... 30c 55c

Soldering—

Soldering Coppers..... 70c 25c 25c
 Cover's Adjustable, list Jan. 1 1886..... 25c 25c

Irons, Pinking, per doz., 65c.

Jack Screws—See Screws.

Jacks, Wagon.

Victory..... 33c 45c
 Victor..... 33c 45c

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..... 25c 55c
 Brass, Spun, Plain, W.M. list Jan. 1, '91..... 25c 55c
 Enamelled and Tea—See Hollow Ware.

Keys—

Lock Ass'n's list Dec. 30, 1886..... 60c 10c
 Eagle, Cabinet, &c..... 33c 45c
 Hotchkiss' Brass Blanks..... 40c
 Hotchkiss, Copper and Tinned..... 40c
 Hotchkiss' Pad, and Cab..... 35c
 Hatchet Key..... 70c 40.00, 15c
 Wollensak's Tinned..... 60c 10c

Knife Sharpeners—See Sharpeners.

Knives.

Butcher, Shoe, &c—
 Wilson's Butcher Knives, list Dec. 8,
 1890..... 25c
 Ames' Butcher Knives..... 25c
 Foster Bros' Butcher, &c..... 40c
 Jordan's A.A.I., Butcher's, list..... net
 Nichols' Butcher Knives..... 40c 10c
 W. W. Wilson, Butcher, 6 in., 2.00; 7
 in., 2.20; 8 in., 2.30, &c..... 20c 25c
 Ames' Shoe Knives..... 20c 25c
 Ames' Bread Knives, 70c 1.15.00, 15c 20c
 Moran's Shoe and Bread..... 30c
 Hay and Straw..... See Hay Knives
 Table and Pocket..... See Cutlery
 Corn, Auburn Mfg. Co. Western Pat..... 30c
 Corn..... 30c

Corns—

Bradley's..... 10c
 Wadsworth's..... 25c

Drawing—

Witherby.....
 P. S. & W..... 75c 75c 10c
 Mix.....
 New Haven.....
 Merrill..... 60c 10c 60c 10c 55c
 Douglas..... 75c 75c 55c
 W. & I. J. White..... 15c 10c 25c
 Bradley's..... 35c
 Adjustable Handle..... 25c 35c 45c
 Wilkinson's Folding..... 25c 25c 55c
 Hay and Straw—
 Lightning, Mfrs. price 70c 1.15.00, 25c
 But jobbers cut this price freely,
 selling at 75c & 80c.....
 Wadsworth's..... 40c 75c 40c 10c
 Carter's Needle..... 70c 1.15.00, 11.50
 Heath's..... 70c 1.15.00, 13.50
 Auburn Hay, Com. and Spear Point..... 50c
 Auburn Straw..... 40c
 Noun's Hay..... 70c 77.00 & 80.00

Am. (3d quality), 70c gr., 1 blade, 37;
 3 blades, 1.12; 3 blades, 1.18..... net
 Lothrop's..... 20c 10c
 Smith's, 70c, Single, 1.20.00; Double, 1.30.00

Knapp & Cowles..... 50c 10c 80c
 Buffalo Adjustable..... 70c 35.00, 25c
 Buffalo Double Adj'table, 70c 35.00, 25c

Knobs—

Door General..... 60c 65c
 Door Porcelain..... 70c 75c
 Door Por. Nickel..... 25c 25c 25c
 Door Por. Plated, Nickel..... 25c 25c 25c
 Drawer, Porcelain..... 60c 10c 60c 10c 10c
 Hemlock Door Knobs..... 40c 10c 50c
 Yale & Towne Wood, list Dec., 1886..... 40c
 Furniture, Plain..... 75c 75c 10c 10c
 Furniture, Wood Screws..... 25c 10c
 Rubber Tip..... 70c 10c 70c
 Picture, Judd's..... 60c 10c 70c
 Picture, Sargent's..... 70c 10c
 Picture, Hemlock..... 35c 55c
 Shutter, Porcelain..... 65c 10c
 Carriage, Jap..... 70c 80c, 60c 10c
 Bardsley's Wood Door, Shutter, &c..... 40c

Ladies—

Melting, Reading..... 55c 10c
 Melting, Monroe's Pat..... 70c 84.00, 40c
 Melting, P. S. & W..... 55c 10c 40c
 Melting, Warner's..... 30c

Lanterns—

2 1/2-inch Bull's-eye Police regular.....
 3-inch Bull's-eye Police regular..... 70c 33.00
 2 1/2-inch Bull's-eye Police flash light..... 70c 44.00
 3-inch Bull's-eye Police flash light..... 70c 44.50

Lawn Mowers—See Mowers, Lawn.

Lenders, Cattle.

Humason, Beckley & Co.'s..... 70c
 Sargent's..... 60c 10c
 Hotchkiss..... 30c
 Peck, Stow & W. Co..... 60c 10c

Lemon Squeezers—See Squeezers.

Lemon.

Lifters, Transom.

Wollensak's:
 Class 3 and 4, Bronzed Iron..... 60c
 Class 3 and 4, Bronzed Metal..... 25c
 Class 3 and 4, Brass..... 35c
 Skylight Lifters..... 65c
 Crown, Eagle and Shield..... 50c
 Reibers, list Feb. 20, 1891..... 50c 55c
 Bronzed Iron Rods..... 50c 10c 10c
 Brass, Real Bronze or Nickel Plate 20c

Excelsior..... 50c 10c 25c
 Shaw's..... 50c 10c
 Universal..... 60c
 Solid Grip..... 60c
 Imperial..... 50c 10c

Lines—

Cotton and Linen Fish, Draper's..... 60c
 Draper's and Tate's Chalk..... 60c
 Draper's Mason's Linen, 84 ft., No. 1,
 1.25; No. 2, 1.17; No. 3, 1.25; No. 4,
 1.25; No. 5, 1.25..... 25c
 Cotton Chalk..... 55c
 Samsor Cotton, No. 4, 25; No. 4 1/2, 25.50;
 10c

Silver Lake, Braided, No. 35 0; No. 1,
 1.05.50; No. 2, 1.07.00; No. 3, 1.10.50
 1.15.00; No. 4, 1.15.00; No. 4,
 2.00; No. 4 1/2, 2.50.00

Mason's Colored Cotton..... 45c
 Wire Clothes, Nos. 12 70 30
 100 ft..... 40 00 35 50 25 00

Ventilator Cord, Samsor Braided,
 White or Drab Cotton, 70c 75.00, 20c

Locks, &c.—

Cabinet—
 Eagle, Gaylord Par. list March, '84, rev
 ker and Corbin..... Jan. 1, '85, 2.35; 2.35
 Delta, Nos. 20 to 30..... 40c
 Delta, Nos. 31 to 35..... 40c 10c
 Delta, Nos. 36 to 38..... 30c
 Stoddard Lock Co..... 30c 23c 45c
 "Champion" Night Latches..... 40c
 Barnes Mfg. Co..... 40c 40c 10c
 Eagle and Corbin Trunk..... 25c 25c
 "Champion" Cab. and Combin..... 35c 45c
 Yale..... net prices
 Romer's..... 25c

Door Locks, Latches, &c.

R. & E. Mfg. Co., list March 30,
 1889..... 65c 10c 70c
 Mallory, Wheeler & Co., list
 July, '88..... Much
 Sargent & Co., list Aug. 1, '88
 Reading Hardware Co., list
 Feb. 8, '88..... lower net
 Brittan, Graham & Mathes, list Jan.
 1890..... prices
 Perkins' Burglar Proof..... 60c 10c 10c
 Barnes Mfg. Co..... 60c 25c
 Plate..... 35c 45c 10c
 Yale..... net prices
 Delta Flat Key..... 30c
 L. & C. Round Key Latches..... 30c 10c
 L. & C. Flat Key Latches..... 35c 45c 10c
 Romer's Night Latches..... 15c
 Shephardson or U. S..... 25c
 Seed's N. Y. Hasp Lock..... 25c

Padlocks—

List Dec. 25, '84..... 75c 10c
 Brittan, Graham & Mathes..... 75c 10c
 Yale Lock Mfg. Co.'s..... net prices
 Eagle..... 35c 25c
 Eureka, Eagle Lock Co..... 40c 25c
 Romer's, Nos. 0 to 91..... 30c
 Romer's Scandinavian, &c., Nos. 100 to
 505..... 125c
 A. E. Deits..... 40c
 Champion Padlocks..... 40c
 Hotchkiss..... 40c
 Star..... 45c
 Horseshoe..... 70c 30.00, 40c 40c 10c
 Barnes Mfg. Co..... 40c 40c 10c
 Nock's..... 60c
 Brown's Pat..... 35c
 Scandinavian Key Latches..... 60c 10c 10c
 R. T. Fralim's Keys and Scandinavian:
 Nos. 119, 120, 130 and 140..... 60c 10c
 Other Nos..... 65c
 Ames Sword Co. up to No. 160..... 40c
 Ames Sword Co. above No. 160..... 60c
 Slaymaker Barry & Co..... 25c 55c
 No. 1010 line..... 25c 55c
 No. 41 line..... 45c 10c
 No. 61 line..... 60c 55c
 No. 21 line..... 75c

Sash, &c.

Clark's, No. 1, 1.10; No. 2, 1.15 gr..... 33c 45c
 Ferguson's..... 33c 45c
 Morris and Triumph, list Aug. 16, 1884..... 60c 35c

Victor.....

Walker's..... 60c 10c 25c
 Atwell Mfg. Co..... 25c 35c 45c
 Reading..... 60c 10c 60c 10c 10c
 Hammond's Window Springs..... 40c
 Common Sense, Jap'd, Cop'd and
 Braided..... 70c 44.00
 Common Sense, Nickel Plated..... gr \$10.00

Universal..... 60c
 Kempshall's Gravity..... 60c
 Kempshall's Model..... 60c 60c 10c
 Corbin's Daisy, list Feb. 15, 1886..... 70c
 Payson's Perfect..... 60c 60c 10c
 Huginin's Sash Balances..... 25c 55c 25c
 Huginin's New Sash Locks..... 25c 55c 25c
 Stoddard's "Practical"
 Patent..... 60c 10c 60c 10c 55c
 Liesche's, Nos. 100 and 110, 70c gr 35;
 105, 110.00..... 20c 10c
 Davis, Bronze, Barnes Mfg. Co..... 50c
 Champion Safety, list March 1, 1888..... 55c 65c 55c

Security.....

Buckeye.....

Lumber Tools—See Tools, Lumber

Lustre—

Four-ounce Bottles..... 70c 1.75; 70c
 gross..... 1.17.00

Machines.

Boring—
 Without
 Augers, Upright, Angular..... 60c
 Douglas..... 60c 50.00, 60.00

Shepard Hand Fluter, No. 110 # dos \$11.00
Shepard Hand Fluter, No. 95 # dos \$5.00
Clark's Hand Fluter # dos \$15.00
Combined Fluter and Sad Iron # dos \$15.00
Buffalo # dos \$10.00
Hoisting—
Moore's Hand Hoist, with Lock 205
Brake 405
Moore's Differential Pulley Block 405
Werner Mfg. Co.'s 254
Sure Grip Steel Tackle Blocks 254
Washing—
Anthony Wayne # dos No. 1, \$51; No. 2, \$45; No. 3, \$43.
Mallets.
Hickory 204100204104105
Lignumvite 204100204104105
B. & L. Block Co., Hickory & L. V. 304304105
Mattocks, Regular list. 604100204104105
Measures—
Standard Fiberware, No. 1, peck, # dozen, \$4; 1/4 peck, \$3.50.
Meat Cutters—See Cutters, Meat.
Mills.
Coffee—
Box and Side, List Jan. 1, 1888 60424
American, Enterprise Mfg. Co. 304104304
The Swift, Lane Bros. 304104
Mining Knives—See Knives, Mining.
Mellasses Gates—See Gates, Mo- lasses.
Money Drawers—See Drawers, Money.
Mowers, Lawn.
Pennsylvania, New Model, Excelsior, Continental, &c. 6040424
Philadelphia 604104
Perfection 604104105
Easy 6041040410425
Other Machines 60410404104705
Muzzles—
Safety # dos, \$3.00, 25¢
Nails.
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89 754105
Tack Mfrs' list 704
Wire Nails, Standard Penny 704
Card June 1, '89, base \$2.30 @ \$2.35
Horse—
Nos. 6 7 8 9 10
Ansable 234 204 254 244 234.
Clinton, Fin. 104 174 164 154 144 134
Essex 234 204 254 244 234.
Lyra 194 174 164 154 144 134
Snowden 194 174 164 154 144 134
Putnam 234 204 254 244 234.
1000 lb in year 15
Vulcan 234 214 204 194 184 174 164 154 144 134
Northwestern 234 214 204 194 184 174 164 154 144 134
Globe 234 214 204 194 184.
Boston 234 214 204 194 184.
A. C. 254 234 224 214 204.
C. B.-K. 254 234 224 214 204.
Maud S. 254 234 224 214 204.
Champlain 234 214 204 194 184.
New Haven 234 214 204 194 184.
Saranac 234 214 204 194 184.
Champion 234 214 204 194 184.
Capewell 234 214 204 194 184.
Star 234 214 204 194 184.
Anchor 234 214 204 194 184.
Western 234 214 204 194 184.
Empire Bronzed 144 134.
Picture—
Brass Head, Sargent's list 604104105
Brass Head, Combination list 604104105
Porcelain Head, Sargent's list 604104105
Porcelain Head, Combination list 604104105
Niles' Patent 405
Nail Pullers—See Pullers, Nail.
Nail Sets—See Sets, Nail.
Nut Crackers—See Crackers, Nut.
Nuts—List Dec. 18, 1889.
Square, Hex.
Hot Pressed 5.40¢ 6.00¢ off list.
Cold Punched 5.00¢ 5.10¢ off list.
In packages of 100 lb, add 1-10¢ # lb.
net; in packages less than 100 lb, add 1/4¢ # lb, net.
Oakum—
Best # 74 @ 77¢
U. S. Navy # 64 @ 67¢
Navy # 60 @ 64¢
Others—
Zinc and Tin 654104705
Brass and Copper 60410450410425
Malleable, Hammer's Improved, No. 1, \$3.00; No. 2, \$4.00; No. 3, \$4.40 # dos.
Malleable, Hammer's, Old Pattern, same list.
Prior's Pat. or "Paragon" 604104105
Prior's Pat. or "Paragon" 604104105
Olmstead's Tin and Zinc 604104105
Olmstead's Brass and Copper 604104105
Broughton's Zinc 604104105
Broughton's Brass 604104105
Genl. P. D. & Co. # gro, \$2
Steel, Draper and Williams 604104105
Openers, Can.
Messenger's Comet # dos \$3.00, 25¢
American # dos \$3.00, 25¢
Duplex # dos 25¢, 15¢ 20¢
Lyman's # dos 25¢, 15¢ 20¢
No. 5, French # dos 25¢, 15¢ 20¢
No. 10, Iron Handle # dos 25¢, 15¢ 20¢
Eureka # dos 25¢, 15¢ 20¢
Sardine Slicer # dos 25¢, 15¢ 20¢
Star # dos 25¢, 15¢ 20¢
Sprague, No. 1 \$2.00 #, \$2.25 #, \$2.50 #
Excelsior No. 1 \$2.50; No. 2, \$1.50 405

World's Best, # gross, No. 1, \$12.00
No. 2, \$34.00; No. 3, \$36.00 604105
Universal, # dos \$3.00 60425
Domestic, # dos \$2.50 455
Champion # dos \$2.00 644
Packing, Steam—
Rubber—
Standard 60425@55¢
Extra 60425@55¢
N. Y. B. & P. Co., Standard 604105
N. Y. B. & P. Co., Empire 604105
N. Y. B. & P. Co., Salamander 355
Jenkins' Standard, # 2 80¢ 2542545
Miscellaneous—
American Packing 104@114¢ #
Russia Packing 144¢ #
Italian Packing 154@144¢ #
Cotton Packing 154@174¢ #
Jute 74@84¢ #
Padlocks—See Locks.
Pails.
Galvanized Iron—
Quarts 10 12 14
Hill's Light Weight, # dos 2.75 3.00 3.25
Hill's Heavy Weight, # dos 3.00 3.25 3.75
Helwig's 2.50 2.75 3.00
Sidney Shepard & Co. 2.35 2.85 3.00
Iron Clad 2.50 2.75 3.00
Fire Buckets 2.75 3.25 3.50
Buckets, see Well Buckets.
Indurated Fibre Ware—25¢
Star Pails, 12 qt. # dos \$1.00
Star, Stable and Milk, 14 qt. # dos \$1.50
Standard Fibre Ware—
Plain. Decr'd
Water Pails, 12 qt., per doz. \$4.00 \$4.50
Dairy Pails, 14 qt., per doz. 4.50 5.00
Fire Pails, No. 1, 12 qt., per doz. 4.50 5.00
Fire Pails, No. 3, 14 qt., per doz. 5.00 5.50
Sugar Pails 6.00 6.50
Horse Pails 6.00 6.50
Buggy Pails 4.00 4.50
Slop Jars (bal. trap) 8.00 9.00
Chamber Pails, 14 qt. 6.50 7.50
Pans.
Dripping.
Small sizes # 2 64¢
Large sizes # 2 54¢
Silver & Co. (Covered) 405
Try—
Standard List:
No. 0 1 2 3 4
dos. \$3.00 \$3.75 \$4.25 \$4.75 \$5.25
No. 1 5 6 7 8
dos. \$6.00 \$7.00 \$8.00 \$9.00
Polished, regular goods 704104
Acme Fry Pans 704105
Dust—
Steel Edge, No. 1 # dos \$1.75
Paper and Cloth—
Sand and Emery—
List April 19, 1889 50404105
Sibley's Emery and Crocus Cloth 304
Parers.
Apple.
Advance # dos \$4.75
Baldwin # dos 5.25
Bonanza each 5.00
Champion # dos 7.35
Daisy # dos 4.00
Dandy each 7.00
Emery each 16.00
Family Bay State # dos 12.00
Favorite # dos 5.00
Gem # dos 5.25
Gold Medal # dos 4.00
Ideal # dos 4.00
Improved Bay State # dos \$7.00 @ \$9.00
Little Star # dos 13.50
Monarch # dos 4.00
New Lightning # dos 5.50
Oriole # dos 4.00
Penn. # dos 4.00
Perfection # dos 4.00
Pomona # dos 4.00
Rocking Table # dos 4.50
Turntable # dos 13.50
Victor # dos 4.00
Waverly # dos 4.00
White Mountain # dos 4.00
72 # dos 4.25
76 # dos 5.75
78 # dos 6.50
Potato—
White Mountain # dos \$4.50
Antirum Combination # dos \$5.50
Hoosier # dos \$13.50
Saratoga # dos \$5.50
Pencils—
Faber's Carpenters' high list 50¢
Faber's Round Gilt # gro \$5.25
Dixon's Lead # gro \$4.50
Dixon's Lumber # gro \$6.75
Dixon's Carpenters' 404105
Picks—
Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00 6041040410425
Picture Nails—See Nails, Picture.
Pinking Irons—See Irons, Pinking.
Pins.
Box—
Humason, Beckley & Co.'s 604105
Sargent & Co.'s \$17 and \$18 604105
Peck, Stow & W Co. 6041040410425
Curtain—
Silvered Glass # net
White Enamel # net
Escutcheon,
Iron, list Nov. 11, 1888 5041040410425
Brass 60404105
Pipe, Wrought Iron—
List September 14, 1889.
1 1/4 and under, Plain 6745¢
1 1/4 and under, Galvanized 50¢
1 1/4 and over, Plain 6745¢
1 1/4 and over, Galvanized 55¢
Solder Tubes.
2 1/4 in. and smaller 55¢
Larger than 2 1/4 60¢
Planes and Plane Irons—
Wood Planes—
Molding 35425¢
Bench, First Quality 50425¢
Bench, Second Quality 55425¢
Bailey's (Stanley R. & L. Co.) 404105

Iron Planes—
Bailey's (Stanley R. & L. Co.)
Miscellaneous Planes (Stanley R. & L. Co.)
Victor Planes (Stanley R. & L. Co.)
Steer's Iron Planes 354354105
Meriden Mill Iron Co.'s 404404105
Davis's Iron Planes 404404105
Birmingham Planes 504504105
Gage Tool Co.'s Self-Setting 304104105
Chaplin's Iron Planes 404404105
Sargent's 80410404104105
Standard Tool Co. 60450425
Plane Irons—
Butcher's 75.00@85.25 to 2
Buck Bros 30¢
Ohio 35425¢
Sandusky 354
S. & I. J. White 354
Plates.
Felloe # 2 64¢@64¢
Pliers and Nippers—
Button's Patent 504504105
Hall's No. 2, 5 in. \$18.50; No. 4, 7 in. \$21.00 # dos
Humason & Beckley Mfg. Co. 504504105
Lindsay's Giant 404
Gas Pliers 60455¢
Eureka Pliers and Nippers 405
Russell's Parallel 254
P. S. & W. Cast Steel 504
P. S. & W. Tinner's Cutting Nippers add 3¢ dis 104
Carew's Pat. Wire Cutters 204
Morrill's Parallel, # dos \$12.00
Cronk's 8 in. \$15.00; 10 in. \$21.00 40440425
Plumbs and Levels—
Regular List 70410404104105
Disout's 604
Pocket Levels 70410404104105
Davis Iron Levels 304
Davis' Inchometers 104105
Poachers.
Buffalo Steam Egg Poachers, # dos, No. 1, \$6.00; No. 2, \$9.00 254
Silver & Co., 6-Ring, # dos \$4; 3-Ring \$2
Pokes, Animal—
Bishop's I. K. L. # dos \$6.00
Bishop's O. K. # dos \$5.25
Bishop's Pioneer # dos \$3.75
Bishop's American # dos \$2.75
Eagle, Double Stale # dos \$5.75
Eagle, Single Stale # dos \$3.75
Buckeye, Single Stale # dos \$2.75
Police Goods.
R. I. Tool Co., Handcuffs, \$15.00 # dos 104
R. I. Tool Co., Leg Irons, \$25.00 # dos 104
Daley's Improved Handcuffs, 2 Hands, \$67.00; 3 Hands, Polished, # dos \$73.00; Nickel, \$84.00 254
J. P. Lovell's Police Goods 254
Polish, Metal.
Prestoline 304
Prestoline Paste 3545¢
Gaston's Silver Compound 3345¢
Polish, Stove.
Joseph Dixon's # gro \$6.00, 10¢
Gem # gro \$4.50, 10¢
Gold Medal # gro \$6.00, 25¢
Mirror # gro \$6.00, 10¢
Lustro # gro \$4.75
Rising Sun, 5 and 10 lb # gro \$5.50
Dixon's Plumbago # 84
Boynton's Noon Day, # gro 13.00
Parlor Pride Stove Enamel # gro
Yates' Liquid, 2 3 5 10 gal. # gal \$0.80 \$0.70 .60
Yates Standard Paste Polish, 10 lb cans, # 124¢
Jet Black # gro \$3.50
Japanese # gro \$3.50
Firestone # gro \$3.50
Diamond O. K. Enamel # gro \$19.00
Bonelli's Liquid Stove Polish, # gro \$9.00
Bonelli's Paste Stove Polish, # gro \$5.50
Black Eagle Benzine Paste, 5 and 10 lb # cans 124¢
Black Jack Water Paste, 5 and 10 lb # cans 124¢
Nickel Plate Paste # gro \$6.00
Crown Paste # gro \$7.20
Crown Paste, in 5 and 10 lb pails # 124¢
Black Flag # gro \$7.50
Black Flag, 5 and 10 lb pails # 124¢
Black Flag, liquid, in bottles, # gro \$3.00
Peppers, Corn—
Round or Square, 1 qt. # gr \$10.00@10.50
Round or Square, 1 1/4 qt. # gr \$15.00@15.50
Round or Square, 2 qt. # gr \$18.50@19.00
Post Hole and Tree Augers
Hole, &c.
Potato Parers—See Parers, Potato.
Pots.
Glue—
Tinned 405
Enameled 40425¢
Family, Howe's Eureka 405
Family, L. P. C.'s "Handy" 504
Presses.
Fruit and Jelly—
Enterprise Mfg. Co. 204104304
Henis # dos \$3.50
Shepard's Queen City 404
Silver & Co. # dos \$2.75
Pranits Hooks and Shears— See Shears.
Pullers.
Not.
Seranton # dos \$15.00, 334¢
Curtis Hammer # dos \$9.00
Giant, No. 1 # dos \$13.00, 10¢
Giant, No. 2 # dos \$16.00, 10¢
Pelican # dos \$9.00, 25¢
Pulleys—
Hot House, A. Wain, &c. 604105
Japanned Screw 604105
Brass Screw 604105
Japanned Side 604105
Japanned Clothes Line 604105
Empire Sash Pulley 554045¢
Hoover's Sash, Anti-Friction 504
Hay Fork, Solid Eye, \$4.00; Swivel, \$4.50 5041040410425
Hay Fork, "Anti-Friction," 5 in. Solid, \$5.70 504
Hay Fork, "P" Common and Pat. 504
Bushed 204
Hay Fork, Tapered, Anti-Friction 204
Hay Fork, Reed's Self-Lubricating 604
Shade Rack 45¢
Tackle Blocks—See Blocks
Moore's Anti-Friction 5 in. Wheel, # dos \$13.00 405

Pumps—
Clatern, Best Makers 60404105
Pitcher Spout, Best Makers 6740705
Pitcher Spout, Cheaper Goods 7040705
Punches—
Saddlers or Drive, good, # dos 60455¢
Bemis & Call Co.'s Cast Steel Drive 50455¢
Bemis & Call Co.'s Springfield Socket 50455¢
Spring, good quality # dos \$2.50@2.60
Spring, Leach's Pat. 15¢
Bemis & Call Co.'s Spring and Check 404
Solid Tinner's, P. S. & W. Co., # dos \$1.44, 55¢
Tin's Hollow Punches P. S. & W. Co. 30425¢
Rice Hand Punches 155¢
Avery's Revolving 404
Avery's Saw-Set and Punch. See Saw Sets.
Rail—
Sliding Door, Wrt Brass, # dos 154
Sliding Door, Bronzed Wrt Iron # ft. 74
Sliding Door, Iron, Painted, # foot 44, 40¢
Barn Door, Light In. 44 44
Per 100 feet \$2.00 2.50 3.10, 10¢
B. D. for N. E. Hangers—
Small, Med. Large.
Per 100 feet \$2.15 2.70 3.25, net
Terry's Steel Rail, # foot 444¢
Victor Track Rail, # foot 50425¢
Carrier Steel Rail, # foot 444¢
Moore's Wrought Iron 254
Rakes—
Cast Steel, Association goods 60404705
Cast Steel, outside goods 60410410470455
Malleable 70470455¢
Gibbs Lawn Rake \$12.00, 50¢15¢
Canton Lawn Rake \$9.00, 50¢10¢
St. Madison Prize Bow Brace and Peer- less
Fort Madison Steel Tooth Lawn Rake, \$6.00 364
Razors—
J. R. Torrey Razor Co. 304
Woolenholme and Butcher, \$10.00 to 15¢
Jordan's A.A.A. list Nov. 1, 1889 504
Jordan's Old Faithful, list Nov. 1, '89 504
Galvanic # dos \$15.00
Razor Strops—See Strops, Razor.
Rings and Ringers.
Bull Rings—
Union Nut Co. 604
Sargent's 60410470455¢
Hotchkiss' low list 304
Humason, Beckley & Co.'s 704104
Peck, Stow & W Co.'s 5041040410425
Elrich Hdw. Co., White Metal, low list 50404105
Hog—
Top of the Hill Ringers # dos \$2.00
Top of the Hill Ringers # dos \$1.25
Hill's Improved Ringers # dos \$1.35
Hill's Old Style Ringers # dos \$1.25
Hill's Tongs # dos \$3.00
Hill's Rings # dos bxs \$1.00
Perfect Rings # dos bxs \$1.50
Perfect Rings # dos \$2.15@2.25
Blair's Hog Ringers # dos \$2.00
Blair's Hog Ringers # dos \$2.00
Champion Ringers # dos \$2.00
Champion Ringers, Double # dos \$2.00
Brown's Ringers # dos \$2.00
Brown's Ringers # dos \$1.50@1.55
Electric Hog Ringers # dos boxes \$1.50
Electric Hog Ringers # dos \$2.00
Rivets and Burrs—
Iron, list Nov. 17, '89 404
Copper 50404104
Coppered Iron, Best Brand 404
Rivet Sets—See Sets.
Rods.
Stair, Brass 35425¢
Stair, Black Walnut # dos 404
Rollers—
Barn Door, Sargent's list 604104105
Acme Moore's Anti-Friction 554
Union Barn Door Roller 704
Rope.
Manila, 1/4 in. and larger # 114¢
Manila, 1/2 in. and larger # 114¢
Manila, 3/4 in. and larger # 114¢
Manila, Tanned Rope # 104¢
Manila, Hay Rope # 114¢
Sisal, 1/4 inch and larger # 74¢
Sisal, 1/2 in. and larger # 84¢
Sisal, 3/4 in. and larger # 84¢
Sisal, Hay Rope # 74¢
Sisal, Tanned Rope # 74¢
Sisal, Medium Lathe Yarn # 74¢
New Zealand, 1/2 in. and larger # 74¢
New Zealand, 3/4 in. and larger # 84¢
New Zealand, 1/2 and 5-16 in. # 84¢
New Zealand, Hay Rope # 74¢
New Zealand, Tanned Rope # 74¢
Note—Manufacturers' prices on above 1/2¢ # lb less, f.o.b. factory.
Cotton Rope # 134¢@144¢
Jute Rope # 2 64¢@64¢
Wire—
List May 1, 1889.
Iron 3344234¢
Iron, Galvanized 404234¢
Cast Steel 404234¢
Rules—
Boxwood 80410410404104104105
Ivory 50404105
Starrett's Rules and Straight Edges 254105
Steel 254105
Sad Irons—See Irons, Sad.
Sand and Emery Paper and
Cloth—See Paper and Cloth, Sand and Emery.
Sash Cords—See Cord, Sash.
Sash Locks—See Locks, Sash.
Sash Weights—See Weights, Sash.
Sausage Stuffers or Fillers— See Stuffers or Fillers, Sausage.
Saws—
Diston's Circular 454
Diston's Cross Cut 454
Diston's Hand 304
Woodrough & W. Parlin.
Hand, Panel and Rip 254
Narrow Champion Cross Cuts with Handles, # foot 204
Champion Thin Back Cross Cuts, # foot 204
Champion Extra Thin Back Cross Cuts, # foot 204
One Man Champion Cross Cuts, # foot 404
Wheeler, Madden & Clemson Mfg. Co. Hand, Panel and Rip 304
Narrow Champion Cross Cuts with Handles, # foot 204
Champion Thin Back Cross Cuts, # foot 204
Champion Extra Thin Back Cross Cuts, # foot 204
One Man Champion Cross Cuts, # foot 404

Atkins' Circular Shingle and Heading dis 50x
Atkins' Silver Steel Diamond X Cuts foot 70x
Atkins' Special Steel Dexter X Cuts foot 50x
Atkins' Special Steel Diamond X Cuts foot 32x
Atkins' Champion and Electric Tooth X Cuts foot 30x
Atkins' Hollow Back X Cuts foot 30x
Atkins' Mulay, Mill and Drag foot 40x
Atkins' One-Man Saw, with handles foot 40x
Peace Circular and Mill foot 40x
Peace Hand Panel and Rip foot 25x
Peace Cross Cuts foot 40x
Richardson's Circular and Mill foot 40x
Richardson's X Cuts foot 40x
Richardson's Hand & C. foot 25x
C. E. Jennings & Co., Hand, Panel and Rip foot 25x
Direct Saws—
Griffin's, complete 40x10x50x
Griffin's Hack Saw, Blades 40x10x50x
Star Hack Saws and Blades 25x
Eureka and Crescent 25x

Scroll—
Lester, complete \$10.00 25x
Rogers, complete \$4.00 25x
Barnes' Builders' and Cabinet Makers' \$15 25x
Barnes' Scroll Saw Blades 35x

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality \$21.00
Hatch, Tea, No. 161 \$20.75
Union Platform, Plain \$2.10
Union Platform, Striped \$2.40
Chattillon's Grocers' Trip Scales 50x
Chattillon's Eureka 25x
Chattillon's Favorite 40x
Family, Turnbills 40x
Riehl Bros.' Platform 40x

Scale Beams—See Beams, Scale

Scissors, Flating 45x

Scrapers—

Adjustable Box Scraper (S. B. & L. Co.) \$6.50
Box, 1 Handle \$4.00
Box, 2 Handle \$6.00
Defiance Box and Ship 50x
Ship, Common \$3.50
Ship, R. I. Tool Co. 10x

Screen Window and Door

Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron 55x10x55x10x10x
Bench, Wood, Beech \$2.25
Bench, Wood, Hickory 20x10x
Hand, Wood 20x10x
Lag, Blunt Point, List Jan. 1, 1890 75x10x
Coach and Lag, Gimlet Point, List Jan. 1, 1890 75x10x
Red 25x5x
Hand Rail, Sargent's 60x10x
Hand Rail, R. & P. Mfg. Co. 70x10x
Hand Rail, A. & S. Screw Co. 75x
Jack Screws, Millers Falls 75x
Jack Screws, P. S. & W. 80x
Jack Screws, Sargent 80x10x
Jack Screws, Stearns 40x10x

Cork—

Humason & Beckley Mfg. Co. 40x10x50x

Williamson's 35x10x50x

Howe Bros. & Hulbert 35x

Machine—

Flat Head, Iron 55x

Round Head, Iron 60x

Wood—

List January 1, 1891.

Flat Head Iron 75x4

Round Head Iron 75x4

Flat Head Brass 75x4

Round Head Brass 75x4

Flat Head Bronze 75x4

Round Head Bronze 75x4

Rogers' Drive Screws 85x4

Scroll Saws—See Saws, Scroll.

Scythes.

Grain 40x5x40x10x

Grass 40x10x50x

Scythe Snaths—See Snaths, Scythe.

Sets.

Avul and Tool.

Alken's Sets, Awls and Tools.

No. 20, \$10.00 55x10x

Pray's Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$20. 25x25x10x

Miller's Falls Adj. Tool Hds. 25x

Nos. 1, \$12; 2, \$18. 25x

Henry's Combination Bar. \$20.00

Brad Sets.

No. 42, \$10.50; No. 43, \$12.50; No. 44, \$14.00; No. 45, \$15.00. 80x10x

Stanley's Excelsior.

No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50. 80x10x

Naft—

Square \$7.00 \$4.00 \$4.25

Round \$7.00 \$4.00 \$4.25

Buck Bros. 27x3

Cannon's Diamond Point \$12.00 \$12.00

Hammer, Hotchkiss \$5.50, 10x
Hammer, Bemis & Call Co.'s new Pat. 30x5x
Bemis & Call Co.'s Lever and Spring Hammer 30x5x
Bemis & Call Co.'s Plate 10x
Bemis & Call Co.'s Cross Cut 12x4x
Alken's Genuine \$12.00, 50x10x
Alken's Imitation \$7.00, 55x5x
Hart's Pat. Lever 20x
Diaston's Star 40x10x50x
Leopold 40x10x50x
Atkin's Lever \$20.00, No. 1, \$6.00
Atkin's Criterion \$20.00, No. 1, \$6.00
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00. 40x10x
Avery's Saw Set and Punch 60x
Chieftain H. R. Co.'s Superior \$15.00, 50x

Sharpeners, Knife.

Parkins.

Applewood Handles \$20.00, 40x

Rosewood or Cocobolo \$20.00, 40x

Shaves, Spoke.

Iron 45x

Wood 30x

Bailey's (Stanley R. & L. Co.) 40x10x

Stearns 30x10x

Cincinnati 25x10x

Goodell's \$20.00, 25x

Shears—

American (Cast) Iron 75x10x75x10x5x

Barnard's Lamp Trimmers \$20.00, 30x2x

Seymour's, List, Dec. 1881 60x10x10x60x10x10x5x

Heinrich's, List, Dec. 1881 60x10x10x60x10x10x5x

Heinrich's Tailor's Shears 35x5x

First quality C. S. Trimmers 80x80x10x

Second quality C. S. Trimmers 80x80x10x

Acme Cast Shears 10x10x

Diamond Cast Shears 10x

Clipper 10x10x

Victor Cast Shears 75x10x75x10x5x

Howe Bros. & Hulbert, Solid Forged Steel 40x

Chicago Drop Forge & F. Co., Solid Steel Forged 60x

Clausen Shear Co., Japaned 70x

Clausen Shear Co., Nickelplated, same list 60x

Galvanic, 3/4 to 9 in, \$1.00, \$1.00 10x

Pruning Shears and Hooks.

Diaston's Combined Pruning Hook and Saw \$18.00, 20x10x

Diaston's Pruning Hook \$12.00, 20x10x

E. S. Lee & Co.'s Pruning Tools 40x

Pruning Shears, Henry's Pat. \$20.00

Henry's Pruning Shears \$4.25, 4.50

Wheeler, M. & C. Co.'s Combination \$12.00, 20x

Dunlap's Saw and Chisel \$5.50, 20x

J. Mallinson & Co., No. 1, \$5.50; No. 2, \$7.50; P. S. & W. Co. 60x

Tinners', etc.—

Shears and Snips (P. S. & W.) 30x25x

Snips, J. Mallinson & Co. 35x45x

Shovels—

Sliding Door—

M. W. Co., list July, 1888 50x10x60x5x

R. & E., list Dec. 18, 1888 55x20x

Corbin's list 60x10x

Patent Roller, Hatfield's 60x10x

Patent Roller, Hatfield's 75x

Russell's Anti-Friction, list Dec. 18, 1888 60x2x

Moore's Anti-Friction 60x

Sliding Shutter—

R. & E. list Dec. 18, 1888 60x10x2x

Sargent's list 60x10x

Reading list 60x10x10x

Ship Tools—

L. & J. White 20x25x

Sheen, Horse, Mule, &c.—

Burden's Perkins', Phoenix and Bryden's Boss at factory 40.00

Bryden's Frog Pressure, at factory 45.00

Add \$1 key to above prices.

Ton lots, \$10.00 \$9.00

1000 lb lots \$9.00

500 lb lots \$9.00

Shot—

Drop, up to BB, 25-b bag \$1.32

Drop, up to BB, 5-b bag .35

Drop, BB and larger, 25-b bag 1.57

Drop, BB and larger, 5-b bag .40

Buck and Chilled, 25-b bag 1.57

Buck and Chilled, 5-b bag .40

Dust Shot, 25-b bag 2.00

Dust Shot, 5-b bag .45

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1888 20x

NOTE.—Jobbers frequently give 5% extra on above.

Griffith's Black Iron 50x10x

Griffith's C. S. 90x60x10x

Griffith's Solid C. S. R. H. Goods 20x

St. Louis Shovel Co. 20x20x7x

Hussey, Binns & Co. 20x20x7x

Hubbard & Co. 30x30x7x

Lehigh Mfg. Co. 30x10x

H. M. Myers Co. 30x

Payne Pettibone & Son 30x

Remington's (Lowman's) Pat. 30x10x40x

Rowland's, Black Iron 50x10x

Rowland's Steel 60x5x60x10x

Shovels and Tongs—

Iron Head 60x10x60x10x5x

Brass Head 60x10x10x

Sieves—

Mann's Tin Rim 50x25x

Buffalo Metallic, S. S. & Co. 50x25x

Shaker (Barber's Pat.) Flour Sifters \$20.00

Electric \$20.00

A. & W. Sifters \$20.00

Hunter's \$20.00

Smith's Adjustable Sifters \$20.00

Smith's Adjustable Milk Strainer \$20.00

Smith's Adjustable T. & C. Strainer \$20.00

Staves, Wooden Rim—

Mesh 18, Nested, \$ dos. 80x \$1.00

Mesh 20, Nested, \$ dos. 95x 1.10

Mesh 24, Nested, \$ dos. \$1.15 1.25

Skels, Thimble—

Western list 75x5x75x10x

Columbus Wrt. Steel, Special net price 70x10x

Coldbrookdale Iron Co. 60x

Seneca Falls Pattern 60x

Utica P. S. T. Skelins 60x

Utica Turned and Fitted 35x

Slates—

School, by case 50x10x50x10x10x

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.) 65x

Fitch's (Bristol) 50x10x

Hotchkiss 10x

Andrews 10x

Sargent's Patent Guarded 70x10x

German, new list 40x10x

Covert 50x2x

Covert, New Patent 60x5x2x

Covert, New R. E. 60x2x

Covered Spring 60x10x10x

Snaths, Scythe.

List 50x10x50x10x5x

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberglass—

Cuspidors, 5 1/2-inch, \$ dos., No. 5, \$8;

No. 5X \$9

Spittoons, Daisy, 8-inch, No. 1, \$4; 10

and 11 inch, \$6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list 70x10x

Steel Table and Tea, Cen. Stamp. Co.'s

list 70x10x

Buffalo S. S. & Co. 35x2x

Silver-Plated—(4 mos. or 5x cash 30

days)

Meriden Brit. Co., Rogers 40x15x

Wire Brads & Nails, see Nails, Wire.	
Steel-Wire Brads, A. & E. Mfg. Co.'s	50¢10¢
Tapos, Measuring—	
American.....	40¢40¢5¢
Spring.....	40¢
Chestman's, Regular List.....	25¢30¢
Thermometers—	
Tin Case.....	80¢80¢10¢
Thimble Skeins—See Skeins.	
Ties, Bale—Steel	
Standard Wire, List.....	50¢10¢5¢
Tinners' Shears, &c.—See Shears,	
Tinners', &c.	
Tinware—	
Stamped, Japanned and Piced, List	
Jan. 20 1887.....	70¢10¢70¢10¢5¢
Tire Benders, Upsetters, &c.—	
See Benders and Upsetters, Tire.	
Tools.	
Coopers'—	
Bradley's.....	20¢
Barton's.....	30¢30¢5¢
L. & J. White.....	30¢5¢
Albertson Mfg. Co.....	25¢
Beatty's.....	30¢
Sandusky Tool Co.....	30¢30¢5¢
Shaves, Cincinnati Tool Co.....	20¢
Lumber.	
Ring Peavies, "Blue Line".....	20¢
Ring Peavies, Common.....	18¢
Steel Socket Peavies.....	22¢
Mail Iron Socket Peavies.....	19¢
Cant Hooks, "Blue Line".....	16¢
Cant Hooks, Common Finish.....	14¢
Cant Hooks, Mail Socket Clasp, "Blue	
Line" Finish.....	16¢
Cant Hooks, Mail Socket Clasp, Com-	
mon Finish.....	14¢
Cant Hooks, Clip Clasp, "Blue Line"	
Finish.....	14¢
Cant Hooks, Clip Clasp, Common Fin-	
ish.....	12¢
Hand Spikes.....	6¢
Pike Poles, Pike & Hook, 12 ft.,	
11 ft., 12 ft., 13 ft., 14 ft., 15 ft.,	
16 ft., 17 ft., 18 ft., 19 ft., 20 ft.,	
21 ft., 22 ft., 23 ft., 24 ft., 25 ft.,	
26 ft., 27 ft., 28 ft., 29 ft., 30 ft.,	
31 ft., 32 ft., 33 ft., 34 ft., 35 ft.,	
36 ft., 37 ft., 38 ft., 39 ft., 40 ft.,	
41 ft., 42 ft., 43 ft., 44 ft., 45 ft.,	
46 ft., 47 ft., 48 ft., 49 ft., 50 ft.,	
51 ft., 52 ft., 53 ft., 54 ft., 55 ft.,	
56 ft., 57 ft., 58 ft., 59 ft., 60 ft.,	
61 ft., 62 ft., 63 ft., 64 ft., 65 ft.,	
66 ft., 67 ft., 68 ft., 69 ft., 70 ft.,	
71 ft., 72 ft., 73 ft., 74 ft., 75 ft.,	
76 ft., 77 ft., 78 ft., 79 ft., 80 ft.,	
81 ft., 82 ft., 83 ft., 84 ft., 85 ft.,	
86 ft., 87 ft., 88 ft., 89 ft., 90 ft.,	
91 ft., 92 ft., 93 ft., 94 ft., 95 ft.,	
96 ft., 97 ft., 98 ft., 99 ft., 100 ft.,	
101 ft., 102 ft., 103 ft., 104 ft., 105 ft.,	
106 ft., 107 ft., 108 ft., 109 ft., 110 ft.,	
111 ft., 112 ft., 113 ft., 114 ft., 115 ft.,	
116 ft., 117 ft., 118 ft., 119 ft., 120 ft.,	
121 ft., 122 ft., 123 ft., 124 ft., 125 ft.,	
126 ft., 127 ft., 128 ft., 129 ft., 130 ft.,	
131 ft., 132 ft., 133 ft., 134 ft., 135 ft.,	
136 ft., 137 ft., 138 ft., 139 ft., 140 ft.,	
141 ft., 142 ft., 143 ft., 144 ft., 145 ft.,	
146 ft., 147 ft., 148 ft., 149 ft., 150 ft.,	
151 ft., 152 ft., 153 ft., 154 ft., 155 ft.,	
156 ft., 157 ft., 158 ft., 159 ft., 160 ft.,	
161 ft., 162 ft., 163 ft., 164 ft., 165 ft.,	
166 ft., 167 ft., 168 ft., 169 ft., 170 ft.,	
171 ft., 172 ft., 173 ft., 174 ft., 175 ft.,	
176 ft., 177 ft., 178 ft., 179 ft., 180 ft.,	
181 ft., 182 ft., 183 ft., 184 ft., 185 ft.,	
186 ft., 187 ft., 188 ft., 189 ft., 190 ft.,	
191 ft., 192 ft., 193 ft., 194 ft., 195 ft.,	
196 ft., 197 ft., 198 ft., 199 ft., 200 ft.,	
201 ft., 202 ft., 203 ft., 204 ft., 205 ft.,	
206 ft., 207 ft., 208 ft., 209 ft., 210 ft.,	
211 ft., 212 ft., 213 ft., 214 ft., 215 ft.,	
216 ft., 217 ft., 218 ft., 219 ft., 220 ft.,	
221 ft., 222 ft., 223 ft., 224 ft., 225 ft.,	
226 ft., 227 ft., 228 ft., 229 ft., 230 ft.,	
231 ft., 232 ft., 233 ft., 234 ft., 235 ft.,	
236 ft., 237 ft., 238 ft., 239 ft., 240 ft.,	
241 ft., 242 ft., 243 ft., 244 ft., 245 ft.,	
246 ft., 247 ft., 248 ft., 249 ft., 250 ft.,	
251 ft., 252 ft., 253 ft., 254 ft., 255 ft.,	
256 ft., 257 ft., 258 ft., 259 ft., 260 ft.,	
261 ft., 262 ft., 263 ft., 264 ft., 265 ft.,	
266 ft., 267 ft., 268 ft., 269 ft., 270 ft.,	
271 ft., 272 ft., 273 ft., 274 ft., 275 ft.,	
276 ft., 277 ft., 278 ft., 279 ft., 280 ft.,	
281 ft., 282 ft., 283 ft., 284 ft., 285 ft.,	
286 ft., 287 ft., 288 ft., 289 ft., 290 ft.,	
291 ft., 292 ft., 293 ft., 294 ft., 295 ft.,	
296 ft., 297 ft., 298 ft., 299 ft., 300 ft.,	
301 ft., 302 ft., 303 ft., 304 ft., 305 ft.,	
306 ft., 307 ft., 308 ft., 309 ft., 310 ft.,	
311 ft., 312 ft., 313 ft., 314 ft., 315 ft.,	
316 ft., 317 ft., 318 ft., 319 ft., 320 ft.,	
321 ft., 322 ft., 323 ft., 324 ft., 325 ft.,	
326 ft., 327 ft., 328 ft., 329 ft., 330 ft.,	
331 ft., 332 ft., 333 ft., 334 ft., 335 ft.,	
336 ft., 337 ft., 338 ft., 339 ft., 340 ft.,	
341 ft., 342 ft., 343 ft., 344 ft., 345 ft.,	
346 ft., 347 ft., 348 ft., 349 ft., 350 ft.,	
351 ft., 352 ft., 353 ft., 354 ft., 355 ft.,	
356 ft., 357 ft., 358 ft., 359 ft., 360 ft.,	
361 ft., 362 ft., 363 ft., 364 ft., 365 ft.,	
366 ft., 367 ft., 368 ft., 369 ft., 370 ft.,	
371 ft., 372 ft., 373 ft., 374 ft., 375 ft.,	
376 ft., 377 ft., 378 ft., 379 ft., 380 ft.,	
381 ft., 382 ft., 383 ft., 384 ft., 385 ft.,	
386 ft., 387 ft., 388 ft., 389 ft., 390 ft.,	
391 ft., 392 ft., 393 ft., 394 ft., 395 ft.,	
396 ft., 397 ft., 398 ft., 399 ft., 400 ft.,	
401 ft., 402 ft., 403 ft., 404 ft., 405 ft.,	
406 ft., 407 ft., 408 ft., 409 ft., 410 ft.,	
411 ft., 412 ft., 413 ft., 414 ft., 415 ft.,	
416 ft., 417 ft., 418 ft., 419 ft., 420 ft.,	
421 ft., 422 ft., 423 ft., 424 ft., 425 ft.,	
426 ft., 427 ft., 428 ft., 429 ft., 430 ft.,	
431 ft., 432 ft., 433 ft., 434 ft., 435 ft.,	
436 ft., 437 ft., 438 ft., 439 ft., 440 ft.,	
441 ft., 442 ft., 443 ft., 444 ft., 445 ft.,	
446 ft., 447 ft., 448 ft., 449 ft., 450 ft.,	
451 ft., 452 ft., 453 ft., 454 ft., 455 ft.,	
456 ft., 457 ft., 458 ft., 459 ft., 460 ft.,	
461 ft., 462 ft., 463 ft., 464 ft., 465 ft.,	
466 ft., 467 ft., 468 ft., 469 ft., 470 ft.,	
471 ft., 472 ft., 473 ft., 474 ft., 475 ft.,	
476 ft., 477 ft., 478 ft., 479 ft., 480 ft.,	
481 ft., 482 ft., 483 ft., 484 ft., 485 ft.,	
486 ft., 487 ft., 488 ft., 489 ft., 490 ft.,	
491 ft., 492 ft., 493 ft., 494 ft., 495 ft.,	
496 ft., 497 ft., 498 ft., 499 ft., 500 ft.,	
501 ft., 502 ft., 503 ft., 504 ft., 505 ft.,	
506 ft., 507 ft., 508 ft., 509 ft., 510 ft.,	
511 ft., 512 ft., 513 ft., 514 ft., 515 ft.,	
516 ft., 517 ft., 518 ft., 519 ft., 520 ft.,	
521 ft., 522 ft., 523 ft., 524 ft., 525 ft.,	
526 ft., 527 ft., 528 ft., 529 ft., 530 ft.,	
531 ft., 532 ft., 533 ft., 534 ft., 535 ft.,	
536 ft., 537 ft., 538 ft., 539 ft., 540 ft.,	
541 ft., 542 ft., 543 ft., 544 ft., 545 ft.,	
546 ft., 547 ft., 548 ft., 549 ft., 550 ft.,	
551 ft., 552 ft., 553 ft., 554 ft., 555 ft.,	
556 ft., 557 ft., 558 ft., 559 ft., 560 ft.,	
561 ft., 562 ft., 563 ft., 564 ft., 565 ft.,	
566 ft., 567 ft., 568 ft., 569 ft., 570 ft.,	
571 ft., 572 ft., 573 ft., 574 ft., 575 ft.,	
576 ft., 577 ft., 578 ft., 579 ft., 580 ft.,	
581 ft., 582 ft., 583 ft., 584 ft., 585 ft.,	
586 ft., 587 ft., 588 ft., 589 ft., 590 ft.,	
591 ft., 592 ft., 593 ft., 594 ft., 595 ft.,	
596 ft., 597 ft., 598 ft., 599 ft., 600 ft.,	
601 ft., 602 ft., 603 ft., 604 ft., 605 ft.,	
606 ft., 607 ft., 608 ft., 609 ft., 610 ft.,	
611 ft., 612 ft., 613 ft., 614 ft., 615 ft.,	
616 ft., 617 ft., 618 ft., 619 ft., 620 ft.,	
621 ft., 622 ft., 623 ft., 624 ft., 625 ft.,	
626 ft., 627 ft., 628 ft., 629 ft., 630 ft.,	
631 ft., 632 ft., 633 ft., 634 ft., 635 ft.,	
636 ft., 637 ft., 638 ft., 639 ft., 640 ft.,	
641 ft., 642 ft., 643 ft., 644 ft., 645 ft.,	
646 ft., 647 ft., 648 ft., 649 ft., 650 ft.,	
651 ft., 652 ft., 653 ft., 654 ft., 655 ft.,	
656 ft., 657 ft., 658 ft., 659 ft., 660 ft.,	
661 ft., 662 ft., 663 ft., 664 ft., 665 ft.,	
666 ft., 667 ft., 668 ft., 669 ft., 670 ft.,	
671 ft., 672 ft., 673 ft., 674 ft., 675 ft.,	
676 ft., 677 ft., 678 ft., 679 ft., 680 ft.,	
681 ft., 682 ft., 683 ft., 684 ft., 685 ft.,	
686 ft., 687 ft., 688 ft., 689 ft., 690 ft.,	
691 ft., 692 ft., 693 ft., 694 ft., 695 ft.,	
696 ft., 697 ft., 698 ft., 699 ft., 700 ft.,	
701 ft., 702 ft., 703 ft., 704 ft., 705 ft.,	
706 ft., 707 ft., 708 ft., 709 ft., 710 ft.,	
711 ft., 712 ft., 713 ft., 714 ft., 715 ft.,	
716 ft., 717 ft., 718 ft., 719 ft., 720 ft.,	
721 ft., 722 ft., 723 ft., 724 ft., 725 ft.,	
726 ft., 727 ft., 728 ft., 729 ft., 730 ft.,	
731 ft., 732 ft., 733 ft., 734 ft., 735 ft.,	
736 ft., 737 ft., 738 ft., 739 ft., 740 ft.,	
741 ft., 742 ft., 743 ft., 744 ft., 745 ft.,	
746 ft., 747 ft., 748 ft., 749 ft., 750 ft.,	
751 ft., 752 ft., 753 ft., 754 ft., 755 ft.,	
756 ft., 757 ft., 758 ft., 759 ft., 760 ft.,	
761 ft., 762 ft., 763 ft., 764 ft., 765 ft.,	
766 ft., 767 ft., 768 ft., 769 ft., 770 ft.,	
771 ft., 772 ft., 773 ft., 774 ft., 775 ft.,	
776 ft., 777 ft., 778 ft., 779 ft., 780 ft.,	
781 ft., 782 ft., 783 ft., 784 ft., 785 ft.,	
786 ft., 787 ft., 788 ft., 789 ft., 790 ft.,	
791 ft., 792 ft., 793 ft., 794 ft., 795 ft.,	
796 ft., 797 ft., 798 ft., 799 ft., 800 ft.,	
801 ft., 802 ft., 803 ft., 804 ft., 805 ft.,	
806 ft., 807 ft., 808 ft., 809 ft., 810 ft.,	
811 ft., 812 ft., 813 ft., 814 ft., 815 ft.,	
816 ft., 817 ft., 818 ft., 819 ft., 820 ft.,	
821 ft., 822 ft., 823 ft., 824 ft., 825 ft.,	
826 ft., 827 ft., 828 ft., 829 ft., 830 ft.,	
831 ft., 832 ft., 833 ft., 834 ft., 835 ft.,	
836 ft., 837 ft., 838 ft., 839 ft., 840 ft.,	
841 ft., 842 ft., 843 ft., 844 ft., 845 ft.,	
846 ft., 847 ft., 848 ft., 849 ft., 850 ft.,	
851 ft., 852 ft., 853 ft., 854 ft., 855 ft.,	
856 ft., 857 ft., 858 ft., 859 ft., 860 ft.,	
861 ft., 862 ft., 863 ft., 864 ft., 865 ft.,	
866 ft., 867 ft., 868 ft., 869 ft., 870 ft.,	
871 ft., 872 ft., 873 ft., 874 ft., 875 ft.,	
876 ft., 877 ft., 878 ft., 879 ft., 880 ft.,	
881 ft., 882 ft., 883 ft., 884 ft., 885 ft.,	
886 ft., 887 ft., 888 ft., 889 ft., 890 ft.,	
891 ft., 892 ft., 893 ft., 894 ft., 895 ft.,	
896 ft., 897 ft., 898 ft., 899 ft., 900 ft.,	
901 ft., 902 ft., 903 ft., 904 ft., 905 ft.,	
906 ft., 907 ft., 908 ft., 909 ft., 910 ft.,	
911 ft., 912 ft., 913 ft., 914 ft., 915 ft.,	
916 ft., 917 ft., 918 ft., 919 ft., 920 ft.,	
921 ft., 922 ft., 923 ft., 924 ft., 925 ft.,	
926 ft., 927 ft., 928 ft., 929 ft., 930 ft.,	
931 ft., 932 ft., 933 ft., 934 ft., 935 ft.,	
936 ft., 937 ft., 938 ft., 939 ft., 940 ft.,	
941 ft., 942 ft., 943 ft., 944 ft., 945 ft.,	
946 ft., 947 ft., 948 ft., 949 ft., 950 ft.,	
951 ft., 952 ft., 953 ft., 954 ft., 955 ft.,	
956 ft., 957 ft., 958 ft., 959 ft., 960 ft.,	
961 ft., 962 ft., 963 ft., 964 ft., 965 ft.,	
966 ft., 967 ft., 968 ft., 969 ft., 970 ft.,	
971 ft., 972 ft., 973 ft., 974 ft., 975 ft.,	
976 ft., 977 ft., 978 ft., 979 ft., 980 ft.,	
981 ft., 982 ft., 983 ft., 984 ft., 985 ft.,	
986 ft., 987 ft., 988 ft., 989 ft., 990 ft.,	
991 ft., 992 ft., 993 ft., 994 ft., 995 ft.,	
996 ft., 997 ft., 998 ft., 999 ft., 1000 ft.,	

House and Rat—	
Mouse Wood Choker, 100 holes, 11¢10¢	
Mouse, Round Wire.....	15¢
Mouse, Cage, Wire.....	25¢
Mouse, Catch-em-alive.....	25¢
Mouse, Bonanza.....	25¢
Rat, Decoy.....	10¢
Ideals.....	10¢
Cyclone.....	10¢
Hotchkiss Metallic Mouse, 5-hole traps, 10¢	
doz., 10¢; in full cases, 10¢ doz.....	75¢
Hotchkiss Imp. Rat Killer.....	15¢
Hotchkiss New Rat Killer.....	15¢
Schuyler's Rat Killer.....	15¢
Triers—	
Butter and cheese.....	25¢
Trimmers, Spoke.	
Bonney's.....	10¢
Stearns.....	10¢
Ives', No. 1, 15¢; No. 2, 12¢ doz.....	10¢
Douglas.....	10¢
Cincinnati.....	10¢
Trowels—	
Lothrop's Brick and Plastering.....	10¢
Read's Brick and Plastering.....	10¢
Disston's Br'k and Plastering.....	10¢
Pease's Plastering.....	10¢
Clement & Maynard's.....	10¢
Rose's Brick.....	10¢
Brade's Brick.....	10¢
Worral's Brick and Plastering.....	10¢
Garden.....	10¢
Trucks, Warehouse, &c.—	
R. & L. Block Co.'s list, '82.....	40¢
Tubes, Boiler—	
See Pipe.	
Twine—	
Flax Twine—	BC. B.
No. 9, 10 and 11 B. Balls.....	25¢ 34¢
No. 12, 13 and 14 B. Balls.....	25¢ 34¢
No. 15, 16 and 17 B. Balls.....	25¢ 32¢
No. 18, 19 and 20 B. Balls.....	25¢ 32¢
No. 21, 22 and 23 B. Balls.....	25¢ 32¢
No. 24, 25 and 26 B. Balls.....	25¢ 32¢
No. 27, 28 and 29 B. Balls.....	25¢ 32¢
No. 30, 31 and 32 B. Balls.....	25¢ 32¢
No. 33, 34 and 35 B. Balls.....	25¢ 34¢
No. 36, 37 and 38 B. Balls.....	25¢ 34¢
No. 39, 40 and 41 B. Balls.....	25¢ 34¢
No. 42, 43 and 44 B. Balls.....	25¢ 34¢
No. 45, 46 and 47 B. Balls.....	25¢ 34¢
No. 48, 49 and 50 B. Balls.....	25¢ 34¢
No. 51, 52 and 53 B. Balls.....	25¢ 34¢
No. 54, 55 and 56 B. Balls.....	25¢ 34¢
No. 57, 58 and 59 B. Balls.....	25¢ 34¢
No. 60, 61 and 62 B. Balls.....	25¢ 34¢
No. 63, 64 and 65 B. Balls.....	25¢ 34¢
No. 66, 67 and 68 B. Balls.....	25¢ 34¢
No. 69, 70 and 71 B. Balls.....	25¢ 34¢
No. 72, 73 and 74 B. Balls.....	25¢ 34¢
No. 75, 76 and 77 B. Balls.....	25¢ 34¢
No. 78, 79 and 80 B. Balls.....	25¢ 34¢
No. 81, 82 and 83 B. Balls.....	25¢ 34¢
No. 84, 85 and 86 B. Balls.....	25¢ 34¢
No. 87, 88 and 89 B. Balls.....	25¢ 34¢
No. 90, 91 and 92 B. Balls.....	25¢ 34¢
No. 93, 94 and 95 B. Balls.....	25¢ 34¢
No. 96, 97 and 98 B. Balls.....	25¢ 34¢
No. 99, 100 and 101 B. Balls.....	25¢ 34¢
No. 102, 103 and 104 B. Balls.....	25¢ 34¢
No. 105, 106 and 107 B. Balls.....	25¢ 34¢
No. 108, 109 and 110 B. Balls.....	25¢ 34¢
No. 111, 112 and 113 B. Balls.....	25¢ 34¢
No. 114, 115 and 116 B. Balls.....	25¢ 34¢
No. 117, 118 and 119 B. Balls.....	25¢ 34¢
No. 120, 121 and 122 B. Balls.....	25¢ 34¢
No. 123, 124 and 125 B. Balls.....	25¢ 34¢
No. 126, 127 and 128 B. Balls.....	25¢ 34¢
No. 129, 130 and 131 B. Balls.....	25¢ 34¢
No. 132, 133 and 134 B. Balls.....	25¢ 34¢
No. 135, 136 and 137 B. Balls.....	25¢ 34¢
No. 138, 139 and 140 B. Balls.....	25¢ 34¢
No. 141, 142 and 143 B. Balls.....	25¢ 34¢
No. 144, 145 and 146 B. Balls.....	25¢ 34¢
No. 147, 148 and 149 B. Balls.....	25¢ 34¢
No. 150, 151 and 152 B. Balls.....	25¢ 34¢
No. 153, 154 and 155 B. Balls.....	25¢ 34¢
No. 156, 157 and 158 B. Balls.....	25¢ 34¢
No. 159, 160 and 161 B. Balls.....	25¢ 34¢
No. 162, 163 and 164 B. Balls.....	25¢ 34¢
No. 165, 166 and 167 B. Balls.....	25¢ 34¢
No. 168, 169 and 170 B. Balls.....	25¢ 34¢
No. 171, 172 and 173 B. Balls.....	25¢ 34¢
No. 174, 175 and 176 B. Balls.....	25¢ 34¢
No. 177, 178 and 179 B. Balls.....	25¢ 34¢
No. 180, 181 and 182 B. Balls.....	25¢ 34¢
No. 183, 184 and 185 B. Balls.....	25¢ 34¢
No. 186, 187 and 188 B. Balls.....	25¢ 34¢
No. 189, 190 and 191 B. Balls.....	25¢ 34¢
No. 192, 193 and 194 B. Balls.....	25¢ 34¢
No. 195, 196 and 197 B. Balls.....	25¢ 34¢
No. 198, 199 and 200 B. Balls.....	25¢ 34¢
No. 201, 202 and 203 B. Balls.....	25¢ 34¢
No. 204, 205 and 206 B. Balls.....	25¢ 34¢
No. 207, 208 and 209 B. Balls.....	25¢ 34¢
No. 210, 211 and 212 B. Balls.....	25¢ 34¢
No. 213, 214 and 215 B. Balls.....	25¢ 34¢
No. 216, 217 and 218 B. Balls.....	25¢ 34¢
No. 219, 220 and 221 B. Balls.....	25¢ 34¢
No. 222, 223 and 224 B. Balls.....	25¢ 34¢
No. 225, 226 and 227 B. Balls.....	25¢ 34¢
No. 228, 229 and 230 B. Balls.....	25¢ 34¢
No. 231, 232 and 233 B. Balls.....	25¢ 34¢
No. 234, 235 and 236 B. Balls.....	25¢ 34¢
No. 237, 238 and 239 B. Balls.....	25¢ 34¢
No. 240, 241 and 242 B. Balls.....	25¢ 34¢
No. 243, 244 and 245 B. Balls.....	25¢ 34¢
No. 246, 247 and 248 B. Balls.....	25¢ 34¢
No. 249, 250 and 251 B. Balls.....	25¢ 34¢
No. 252, 253 and 254 B. Balls.....	25¢ 34¢
No. 255, 256 and 257 B. Balls.....	25¢ 34¢
No. 258, 259 and 260 B. Balls.....	25¢ 34¢
No. 261, 262 and 263 B. Balls.....	25¢ 34¢
No. 264, 265 and 266 B. Balls.....	25¢ 34¢
No. 267, 268 and 269 B. Balls.....	25¢ 34¢
No. 270, 271 and 272 B. Balls.....	25¢ 34¢
No. 273, 274 and 275 B. Balls.....	25¢ 34¢
No. 276, 277 and 278 B. Balls.....	25¢ 34¢
No. 279, 280 and 281 B. Balls.....	25¢ 34¢
No. 282, 283 and 284 B. Balls.....	25¢ 34¢
No. 285, 286 and 287 B. Balls.....	25¢ 34¢
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No. 291, 292 and 293 B. Balls.....	25¢ 34¢
No. 294, 295 and 296 B. Balls.....	25¢ 34¢
No. 297, 298 and 299 B. Balls.....	25¢ 34¢
No. 300, 301 and 302 B. Balls.....	25¢ 34¢
No. 303, 304 and 305 B. Balls.....	25¢ 34¢
No. 306, 307 and 308 B. Balls.....	25¢ 34¢
No. 309, 310 and 311 B. Balls.....	25¢ 34¢
No. 312, 313 and 314 B. Balls.....	25¢ 34¢
No. 315, 316 and 317 B. Balls.....	25¢ 34¢
No. 318, 319 and 320 B. Balls.....	25¢ 34¢
No. 321, 322 and 323 B. Balls.....	25¢ 34¢
No. 324, 325 and 326 B. Balls.....	25¢ 34¢
No. 327, 328 and 329 B. Balls.....	25¢ 34¢
No. 330, 331 and 332 B. Balls.....	25¢ 34¢
No. 333, 334 and 335 B. Balls.....	25¢ 34¢
No. 336, 337 and 338 B. Balls.....	25¢ 34¢
No. 339, 340 and 341 B. Balls.....	25¢ 34¢
No. 342, 343 and 344 B. Balls.....	25¢ 34¢
No. 345, 346 and 347 B. Balls.....	25¢ 34¢
No. 348, 349 and 350 B. Balls.....	25¢ 34¢
No. 351, 352 and 353 B. Balls.....	25¢ 34¢
No. 354, 355 and 356 B. Balls.....	25¢ 34¢
No. 357, 358 and 359 B. Balls.....	25¢ 34¢
No. 360, 361 and 362 B. Balls.....	25¢ 34¢
No. 363, 364 and 365 B. Balls.....	25¢ 34¢
No. 366, 367 and 368 B. Balls.....	25¢ 34¢
No. 369, 370 and 371 B. Balls.....	25¢ 34¢
No. 372, 373 and 374 B. Balls.....	25¢ 34¢
No. 375, 376 and 377 B. Balls.....	25¢ 34¢
No. 378, 379 and 380 B. Balls.....	25¢ 34¢
No. 381, 382 and 383 B. Balls.....	25¢ 34¢
No. 384, 385 and 386 B. Balls.....	25¢ 34¢
No. 387, 388 and 389 B. Balls.....	25¢ 34¢
No. 390, 391 and 392 B. Balls.....	25¢ 34¢
No. 393, 394 and 395 B. Balls.....	25¢ 34¢
No. 396, 397 and 398 B. Balls.....	25¢ 34¢
No. 399, 400 and 401 B. Balls.....	25¢ 34¢
No. 402, 403 and 404 B. Balls.....	25¢ 34¢
No. 405, 406 and 407 B. Balls.....	25¢ 34¢
No. 408, 409 and 410 B. Balls.....	25¢ 34¢
No. 411, 412 and 413 B. Balls.....	25¢ 34¢
No. 414, 415 and 416 B. Balls.....	25¢ 34¢
No. 417, 418 and 419 B. Balls.....	25¢ 34¢
No. 420, 421 and 422 B. Balls.....	25¢ 34¢
No. 423, 424 and 425 B. Balls.....	25¢ 34¢
No. 426, 427 and 428 B. Balls.....	25¢ 34¢
No. 429, 430 and 431 B. Balls.....	25¢ 34¢
No. 432, 433 and 434 B. Balls.....	25¢ 34¢
No. 435, 436 and 437 B. Balls.....	25¢ 34¢
No. 438, 439 and 440 B. Balls.....	25¢ 34¢
No. 441, 442 and 443 B. Balls.....	25¢ 34¢
No. 444, 445 and 446 B. Balls.....	25¢ 34¢
No. 447, 448 and 449 B. Balls.....	25¢ 34¢
No. 450, 451 and 452 B. Balls.....	25¢ 34¢
No. 453, 454 and 455 B. Balls.....	25¢ 34¢
No. 456, 457 and 458 B. Balls.....	25¢ 34¢
No. 459, 460 and 461 B. Balls.....	25¢ 34¢
No. 462, 463 and 464 B. Balls.....	25¢ 34¢
No. 465, 466 and 467 B. Balls.....	25¢ 34¢
No. 468, 469 and 470 B. Balls.....	25¢ 34¢
No. 471, 472 and 473 B. Balls.....	25¢ 34¢
No. 474, 475 and 476 B. Balls.....	25¢ 34¢
No. 477, 478 and 479 B. Balls.....	25¢ 34¢
No. 480, 481 and 482 B. Balls.....	25¢ 34¢
No. 483, 484 and 485 B. Balls.....	25¢ 34¢
No. 486, 487 and 488 B. Balls.....	25¢ 34¢
No. 489, 490 and 491 B. Balls.....	25¢ 34¢
No. 492, 493 and 494 B. Balls.....	25¢ 34¢
No. 495, 496 and 497 B. Balls.....	25¢ 34¢
No. 498, 499 and 500 B. Balls.....	25¢ 34¢
No. 501, 502 and 503 B. Balls.....	25¢ 34¢
No. 504, 505 and 506 B. Balls.....	25¢ 34¢
No. 507, 508 and 509 B. Balls.....	25¢ 34¢
No. 510, 511 and 512 B. Balls.....	25¢ 34¢
No. 513, 514 and 515 B. Balls.....	25¢ 34¢
No. 516, 517 and 518 B. Balls.....	25¢ 34¢
No. 519, 520 and 521 B. Balls.....	25¢ 34¢
No. 522, 523 and 524 B. Balls.....	25¢ 34¢
No. 525, 526 and 527 B. Balls.....	25¢ 34¢
No. 528, 529 and 530 B. Balls.....	25¢ 34¢
No. 531, 532 and 533 B. Balls.....	25¢ 34¢
No. 534, 535 and 536 B. Balls.....	25¢ 34¢
No. 537, 538 and 539 B. Balls.....	25¢ 34¢
No. 540, 541 and 542 B. Balls.....	25¢ 34¢
No. 543, 544 and 545 B. Balls.....	25¢ 34¢
No. 546, 547 and 548 B. Balls.....	25¢ 34¢
No. 549, 550 and 551 B. Balls.....	25¢ 34¢
No. 552, 553 and 554 B. Balls.....	25¢ 34¢
No. 555, 556 and 557 B. Balls.....	25¢ 34¢
No. 558, 559 and 560 B. Balls.....	25¢ 34¢
No. 561, 562 and 563 B. Balls.....	25¢ 34¢
No. 564, 565 and 566 B. Balls.....	25¢ 34¢
No. 567, 568 and 569 B. Balls.....	25¢ 34¢
No. 570, 571 and 572 B. Balls.....	25¢ 34¢
No. 573, 574 and 575 B. Balls.....	25¢ 34¢
No. 576, 577 and 578 B. Balls.....	25¢ 34¢
No. 579, 580 and 581 B. Balls.....	25¢ 34¢
No. 582, 583 and 584 B. Balls.....	25¢ 34¢
No. 585, 586 and 587 B. Balls.....	25¢ 34¢
No. 588, 589 and 590 B. Balls.....	25¢ 34¢
No. 591, 592 and 593 B. Balls.....	25¢ 34¢
No. 594, 595 and 596 B. Balls.....	25¢ 34¢
No. 597, 598 and 599 B. Balls.....	25¢ 34¢
No. 600, 601 and 602 B. Balls.....	25¢ 34¢
No. 603, 604 and 605 B. Balls.....	25¢ 34¢
No. 606, 607 and 608 B. Balls.....	25¢ 34¢
No. 609, 610 and 611 B. Balls.....	25¢ 34¢
No. 612, 613 and 614 B. Balls.....	25¢ 34¢
No. 615, 616 and 617 B. Balls.....	25¢ 34¢
No. 618, 619 and 620 B. Balls.....	25¢ 34¢
No. 621, 622 and 623 B. Balls.....	25¢ 34¢
No. 624, 625 and 626 B. Balls.....	25¢ 34¢
No. 627, 628 and 629 B. Balls.....	25¢ 34¢
No. 630, 631 and 632 B. Balls.....	25¢ 34¢
No. 633, 634 and 635 B. Balls.....	25¢ 34¢
No. 636, 637 and 638 B. Balls.....	25¢ 34¢
No. 639, 640 and 641 B. Balls.....	25¢ 34¢
No. 642, 643 and 644 B. Balls.....	25¢ 34¢
No. 645, 646 and 647 B. Balls.....	25¢ 34¢
No. 648, 649 and 650 B. Balls.....	25¢ 34¢
No. 651, 652 and 653 B. Balls.....	25¢ 34¢
No. 654, 655 and 656 B. Balls.....	25¢ 34¢
No. 657, 658 and 659 B. Balls.....	25¢ 34¢
No. 660, 661 and 662 B. Balls.....	25¢ 34¢
No. 663, 664 and 665 B. Balls.....	25¢ 34¢
No. 666, 667 and 668 B. Balls.....	25¢ 34¢
No. 669, 670 and 671 B. Balls.....	25¢ 34¢
No. 672, 673 and 674 B. Balls.....	25¢ 34¢
No. 675, 676 and 677 B. Balls.....	25¢ 34¢
No. 678, 679 and 680 B. Balls.....	25¢ 34¢
No. 681, 682 and 683 B. Balls.....	25¢ 34¢
No. 684, 685 and 686 B. Balls.....	25¢ 34¢
No. 687, 688 and 689 B. Balls.....	25¢ 34¢
No. 690, 691 and 692 B. Balls.....	25¢ 34¢
No. 693, 694 and 695 B. Balls.....	25¢ 34¢
No. 696, 697 and 698 B. Balls.....	25¢ 34¢
No. 699, 700 and 701 B. Balls.....	25¢ 34¢
No. 702, 703 and 704 B. Balls.....	25¢ 34¢
No. 705, 706 and 707 B. Balls.....	25¢ 34¢
No. 708, 709 and 710 B. Balls.....	25¢ 34¢
No. 711, 712 and 713 B. Balls.....	25¢ 34¢
No. 714, 715 and 716 B. Balls.....	25¢ 34¢
No. 717, 718 and 719 B. Balls.....	25¢ 34¢
No. 720, 721 and 722 B. Balls.....	25¢ 34¢
No. 723, 724 and 725 B. Balls.....	25¢ 34¢
No. 726, 727 and 728 B. Balls.....	25¢ 34¢
No. 729, 730 and 731 B. Balls.....	25¢ 34¢
No. 732, 733 and 734 B. Balls.....	25¢ 34¢
No. 735, 736 and 737 B. Balls.....	25¢ 34¢
No. 738, 739 and 740 B. Balls.....	25¢ 34¢
No. 741, 742 and 743 B. Balls.....	25¢ 34¢
No. 744, 745 and 746 B. Balls.....	25¢ 34¢
No. 747, 748 and 749 B. Balls.....	25¢ 34¢
No. 750, 751 and 752 B. Balls.....	25¢ 34¢
No. 753, 754 and 755 B. Balls.....	25¢ 34¢
No. 756, 757 and 758 B. Balls.....	25¢ 34¢
No. 759, 760 and 761 B. Balls.....	25¢ 34¢
No. 762, 763 and 764 B. Balls.....	25¢ 34¢
No. 765, 766 and 767 B. Balls.....	25¢ 34¢
No. 768, 769 and 770 B. Balls.....	25¢ 34¢
No. 771, 772 and 773 B. Balls.....	25¢ 34¢
No. 774, 775 and 776 B. Balls.....	25¢ 34¢
No. 777, 778 and 779 B. Balls.....	25¢ 34¢
No. 780, 781 and 782 B. Balls.....	25¢ 34¢
No. 783, 784 and 785 B. Balls.....	25¢ 34¢
No. 786, 787 and 788 B. Balls.....	25¢ 34¢
No. 789, 790 and 791 B. Balls.....	25¢ 34¢
No. 792, 793 and 794 B. Balls.....	25¢ 34¢
No. 795, 796 and 797 B. Balls.....	25¢ 34¢
No. 798, 799 and 800 B. Balls.....	25¢ 34¢
No. 801, 802 and 803 B. Balls.....	25¢ 34¢
No. 804, 805 and 806 B. Balls.....	25¢ 34¢
No. 807, 808 and 809 B. Balls.....	25¢ 34¢
No. 810, 811 and 812 B. Balls.....	25¢ 34¢
No. 813, 814 and 815 B. Balls.....	25¢ 34¢
No. 816, 817 and 818 B. Balls.....	25¢ 34¢
No. 819, 820 and 821 B. Balls.....	25¢ 34¢
No. 822, 823 and 824 B. Balls.....	25¢ 34¢
No. 825, 826 and 827 B. Balls.....	25¢ 34¢
No. 828, 829 and 830 B. Balls.....	25¢ 34¢
No. 831, 832 and 833 B. Balls.....	25¢ 34¢
No. 834, 835 and 836 B. Balls.....	25¢ 34¢
No. 837, 838 and 839 B. Balls.....	25¢ 34¢
No. 840, 841 and 842 B. Balls.....	25¢ 34¢
No. 843, 844 and 845 B. Balls.....	25¢ 34¢
No. 846, 847 and 848 B. Balls.....	25¢ 34¢
No. 849, 850 and 851 B. Balls.....	25¢ 34¢
No. 852, 853 and 854 B. Balls.....	25¢ 34¢
No. 855, 856 and 857 B. Balls.....	25¢ 34¢
No. 858, 859 and 860 B. Balls.....	25¢ 34¢
No. 861, 862 and 863 B. Balls.....	25¢ 34¢
No. 864, 865 and 866 B. Balls.....	25¢ 34¢
No. 867, 868 and 869 B. Balls.....	25¢ 34¢
No. 870, 871 and 872 B. Balls.....	25¢ 34¢
No. 873, 874 and 875 B. Balls.....	25¢ 34¢
No. 876, 877 and 878 B. Balls.....	25¢ 34¢
No. 8	

CURRENT METAL PRICES.

APRIL 29, 1891.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
1/2 to 2 in. round and square...	2.00 @ 2.10
1 to 6 in. x 1/2 to 1 in.	
Bedded Iron:	
1/2 to 2 in. round and square...	2.10 @ 2.30
1 to 4 in. x 1/2 to 1 in.	
1 to 6 in. x 1/2 and 5-16	2.30 @ 2.50
Beds—1/2 and 1-16 round and sq.	2.20 @ 2.40
Beds—1 to 6 x 1-16 to No. 12	2.40 @ 2.60
"Burden Best" Iron, base price	2.00
Burden's "H. B. & S." Iron, base price	2.80
"Uster"	3.00
Norway Bars	4.00
Norway Shapes	5.00

Merchant Steel from Store.

Open-Hearth and Bessemer Machinery,	Per pound.
Toe Calk, Tire and Sleigh Shoe, base price in small lots	2 3/4
Best Cast Steel, base price in small lots	3
Best Cast Steel Machinery, base price in small lots	5 1/2

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16	3.00 @ 3.00	3.85	2.00
17 to 20	3.15 @ 3.25	3.85	2.75
21 to 24	3.35 @ 3.35	3.60	2.00
25 and 26	3.35 @ 3.35	3.60	2.00
27	3.50 @ 3.50	3.85	2.00
28	3.65 @ 3.65	4.10	2.00
B. R.			3d qual.
Galv'd, 14 to 20	4.75 @ 4.80	5.00	2.00
Galv'd, 21 to 24	5.12 @ 5.12	5.50	2.00
Galv'd, 25 to 26	5.50 @ 5.50	5.85	2.00
Galv'd, 27	5.90 @ 5.90	6.10	2.00
Galv'd, 28	6.25 @ 6.25	6.10	2.00
Patent Platinized	10 @ 10		
Russia	10 @ 10		
American Cold Rolled B. R.	5 @ 5		
Craig Polished Sheet Steel	8 @ 8		

English Steel from Store.

Best Cast	15 @ 15
Extra Cast	16 @ 16
Swaged, Cast	16 @ 16
Best Double Shear	15 @ 15
Blister, 1st quality	12 @ 12
German Steel, Best	10 @ 10
3d quality	9 @ 9
3d quality	8 @ 8
Sheet Cast Steel, 1st quality	15 @ 15
3d quality	14 @ 14
3d quality	13 @ 13
R. Mushet's "Special"	45 @ 45
"Titanic"	30 @ 30

METALS.

Tin.

Banca, Pigs	22 1/2
Straits, Pigs	21
Straits in Bars	23

Tin Plates.

	Charcoal Plates.—Bright.	Per box.
Melny Grade.		
14	IC, 10 x 14	6.75
14	IC, 12 x 12	6.75
14	IC, 14 x 20	6.10
14	IC, 20 x 28	13.21
14	IX, 10 x 14	8.00
14	IX, 12 x 12	8.25
14	IX, 14 x 20	8.00
14	IX, 20 x 28	16.00
14	DC, 12 1/2 x 17	6.00
14	DX, 12 1/2 x 17	7.50
Oalland Grade.		
14	IC, 10 x 14	6.50
14	IC, 12 x 12	6.75
14	IC, 14 x 20	6.40
14	IX, 10 x 14	7.65
14	IX, 12 x 12	8.00
14	IX, 14 x 20	7.65
Allaway Grade.		
14	IC, 10 x 14	6.15
14	IC, 12 x 12	6.30
14	IC, 14 x 20	6.15
14	IC, 20 x 28	12.00
14	IX, 10 x 14	7.80
14	IX, 12 x 12	7.60
14	IX, 14 x 20	7.30
14	IX, 20 x 28	14.00
14	DC, 12 1/2 x 17	5.80
14	DX, 12 1/2 x 17	6.00

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20	5.70
10 x 20	7.85
20 x 28	11.30
IX, 10 x 14, 14 x 20	6.60
EV Grade.—IC, 10 x 14, 14 x 20	5.70

Charcoal Plates.—Tenne.

Dean Grade.—IC, 14 x 20	5.45
20 x 28	10.60
IX, 14 x 20	6.30
20 x 28	12.35
Abecarne Grade.—IC, 14 x 20	5.25
20 x 28	10.60
IX, 14 x 20	6.35
20 x 28	12.35

Tin Boiler Plates.

IX, 14 x 26	112 sheets	13.50
IX, 14 x 26	112 sheets	13.75
IX, 14 x 31	112 sheets	15.25

Copper.

Duty: Pig, Bar and Ingot, 1 1/4¢; Old Copper, 1¢
 D. Manufactured (including all articles of which Copper is a component of chief value), 3 1/2¢ ad valorem.

Ingot.

Late	15 1/2
Anson's Grade Arizona	13 1/2
Anson's Grade Casting	12 1/2

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890, being quotations for all sized lots.

	Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound.
				Over 64 oz.
				32 to 64 oz.
				16 to 32 oz.
				8 to 16 oz.
				4 to 8 oz.
				2 to 4 oz.
				1 to 2 oz.
				Less than 1 oz.
30-72				22 1/2
30-96				22 1/2
36-96				22 1/2
42-96				22 1/2
48-96				22 1/2
60-96				22 1/2
84-96				22 1/2
Over 84 in. wide				25

All Bath Tub Sheets.... 16 oz. 14 oz. 12 oz. 10 oz.
 Per pound..... 20.37 0.29 0.31 0.35
 Bolt Copper, 1/2 inch diameter and over, per pound..... 22 1/2
 Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Copper Bottoms, Pits and Flats.

14 ounce to square foot and heavier 26 || 12 ounce and up to 14 ounce to square foot | 27 |
10 ounce and up to 12 ounce	29
Lighter than 10 ounce	33
Circles less than 8 inches diameter 2 cents per pound additional.	
Circles over 8 inches diameter are not classed as Copper Bottoms.	

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each 84 || Tinning sheets on one side, 30 x 60 each | 80 |
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	154
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	124
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each	124
Tinning sheets on one side, other sizes, per square foot	34
For tinning both sides double the above prices.	

Platinized Brass and Copper.

14 x 48, 14 x 60, 14 x 66, 14 x 60 in.
 14 and 16 oz. and heavier 35 || 12 oz. and lighter | 35 |
| 24 x 48 and 30 x 60 | 34 |
| 14 and 16 oz. and heavier | 30 |

Seamless Brass and Copper Tubes.

O. G.	N. G.	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2
8-14	6-12	37	33	30	29	28	27	24
15	13	38	34	31	30	29	28	25
16	14	39	35	32	31	30	29	26
17	15	40	36	33	32	31	30	27
18	16	42	38	34	33	32	31	28
19	17	43	39	35	34	33	32	29
20	18-19	44	40	37	36	35	34	31
21	20	45	41	38	37	36	35	32
22	21	46	42	40	39	38	37	33
23	22	47	43	41	40	39	38	34
24	23	48	44	42	41	40	39	35
25	24	49	45	43	42	41	40	36

Copper Bronze and Gilding Tube, 3¢ per lb. additional.

Brass and Copper Tubing. (To No. 20, inclusive.)

Above 5-16 inch to 3 inch, inclusive 35 || Plain, above 3 inch | 45 |
Plain, 5-16 inch	45
Plain, 1/2 inch	50
Plain, 3/4 inch	50
Fancy Tubing, Brass, to No. 20, inclusive	45
Iron Tubing, 3¢ per lb. more than Brass.	
Discount from list	25

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass:	in.	in.	in.	in.	in.	in.	in.	in.
Wider than and including	10	12	14	16	18	20	22	24
To No. 20, inclusive	31	22	23	25	27	28	31	33
Nos. 21, 22, 23 and 24	32	23	24	26	28	29	32	34
Nos. 25 and 26	33	24	25	27	29	30	33	35
Nos. 27 and 28	33	24	25	28	30	31	34	36

Common High Brass:	in.	in.	in.	in.	in.	in.	in.	in.
Wider than and including	26	28	30	32	34	36	38	40
To No. 20, inclusive	36	39	42	46	50	55	60	65
Nos. 21, 22, 23 and 24	37	40	43	47	51	56	61	66
Nos. 25 and 26	38	41	44	48	52	57	62	67
Nos. 27 and 28	39	42	45	49	53	58	63	68

Brass and Copper Wire.

Old English gauge standard.	Com. high brass.	Low brass.	Gilding brass & copper.
Per lb.	Per lb.	Per lb.	Per lb.
All Nos. to No. 16, inclusive	\$0.32	\$0.28	\$0.50
No. 17 and No. 18 .....	.23	.27	.31
No. 19 " " 20 .....	.24	.28	.32
No. 21 .....	.25	.29	.33
No. 22 .....	.26	.30	.34
No. 23 .....	.28	.32	.36
No. 24 .....	.30	.34	.38
No. 25 .....	.32	.36	.40
No. 26 .....	.35	.39	.45
No. 27 .....	.38	.42	.48
No. 28 .....	.42	.46	.51
No. 29 .....	.45	.49	.54
No. 30 .....	.48	.52	.57
No. 31 .....	.51	.55	.60
No. 32 .....	.55	.59	.63
No. 33 .....	.59	.63	.67
No. 34 .....	.64	.68	.72
No. 35 .....	.70	.74	.78
No. 36 .....	.76	.80	.84
No. 37	1.00	1.04	1.08
No. 38	1.30	1.34	1.38
No. 39	2.00	2.04	2.08
No. 40	2.60	2.64	2.68

Spring Wire, 2¢ per lb. advance.

Copper Belt and Hose Rivets and Burrs.

Per lb.	Per lb.
No. 5	49¢
No. 6	49¢
No. 7	49¢
No. 8	50¢
No. 9	52¢
No. 10	54¢
No. 11	55¢
No. 12	56¢
No. 13	57¢
No. 14	58¢
No. 15	59¢

Tobin Bronze—Rods.

1/4 inch and larger 18¢ |

Tobin Bronze—Piston Rods.

1 1/4 inch and smaller 30¢ || 1 1/2 to 2 1/4 inch | 27¢ |
| 2 1/2 inch and larger | 25¢ |

Spelter.

Duty: Pig, Bars and Plates, \$1.50 @ 100 lb.
 Western Spelter 54¢ || Bertha (pure) | 54¢ |

Zinc.

Duty: Sheet, 3 1/4¢ per lb.
 600 lb. casks 64¢ || Per lb. | 74¢ |

Lead.

Duty: Pig, 3¢ per 100 lb. Old Lead, 2¢ per lb. Pipe and Sheets, 3 1/4¢ per lb.
 American 44¢ || Bar | 5¢ |
Pipe, subject to trade discount	10¢
Tin-Lined Pipe, subject to trade discount	15¢
Block Tin Pipes, subject to trade discount	37¢
Sheet, subject to trade discount	74¢

Solder.

1/2 @ 1/2 (Guaranteed) 14¢ || No. 1 | 12¢ |
| Extra Wiping | 11¢ |
| The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition. | |

Antimony.

Cookson 17 1/2¢ || Hallett's | 16 1/2¢ |

ALUMINUM.

Prices in Ingots.

In lots of 2000 lb. and over \$1.50 |

Old Metals.

(Prices Paid in New York.)

Heavy Copper 12¢ || Light Copper | 11¢ |
Heavy Brass	10¢
Light Brass	9¢
Lead	8¢
Tea Lead	8¢
Zinc	8¢
No. 1 Pewter	10¢
No. 2 Pewter	8¢
Wrought Scrap Iron	gross ton \$19.00
Heavy Cast Scrap	gross ton 12.00
Stove Plate Scrap	gross ton 8.00
Burnt Iron	gross ton 6.00